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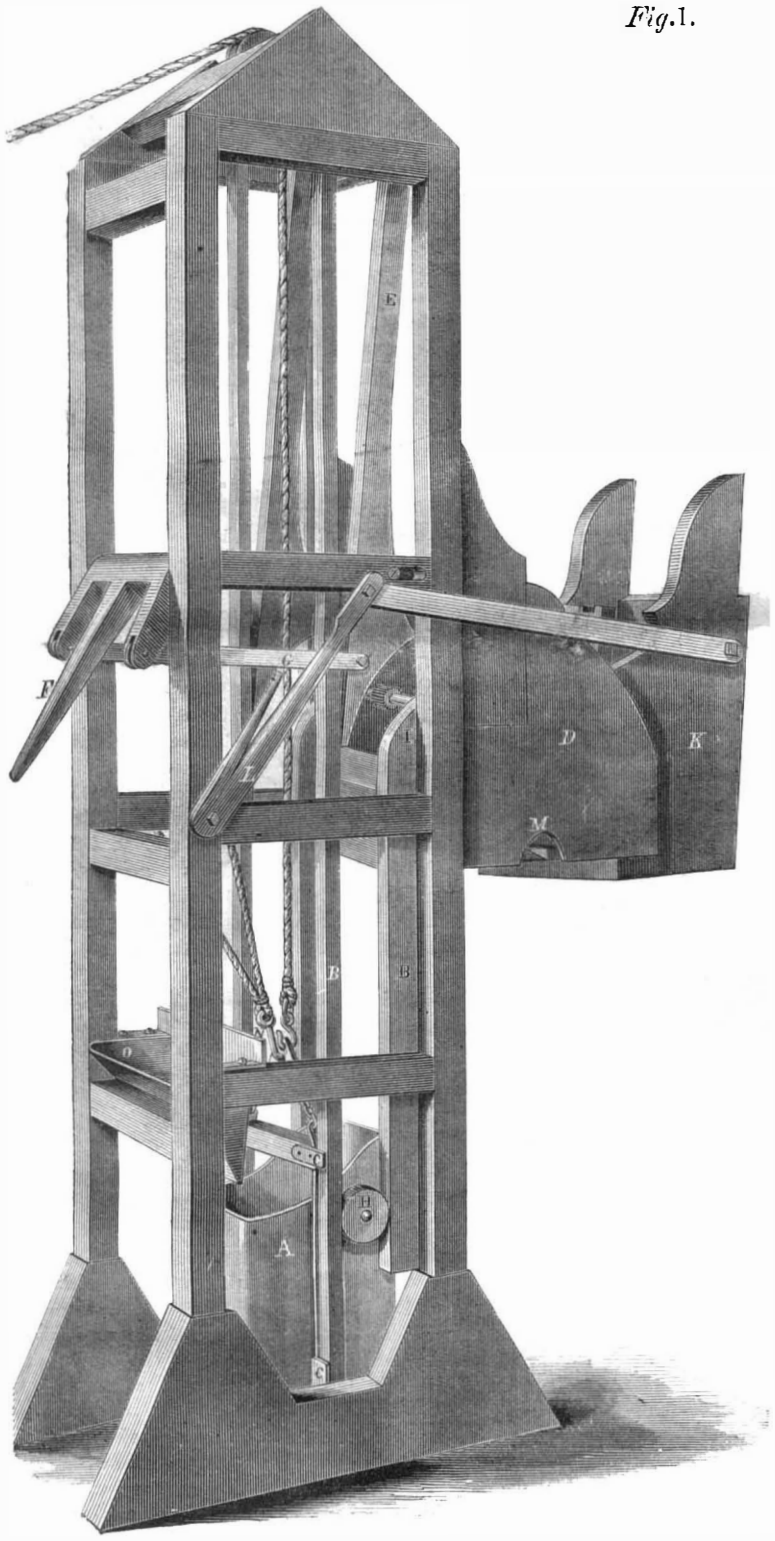
Improved Elevator for Mines.

The business of mining in this country has grown wonderfully within twenty-five years. Our coal production, which was the main mining interest, was the result chiefly of foreign talent and labor, our own people evincing no predilection for the business. The discovery of the vast deposits of copper in the Lake Superior region, and the gradual failure of the pan diggings of California, aroused the attention of our capitalists and mechanics to the necessity of a scientific and systematic prosecution of the art of mining. So successful have been the efforts in this direction, that mining has become one of the chief resources of our wealth. Our mines of the precious metals are of such extent and richness, that they may be relied upon for the production of gold and silver enough for the extinguishment of our national debt, without aid from any other element of productive wealth.

Fig. 1.

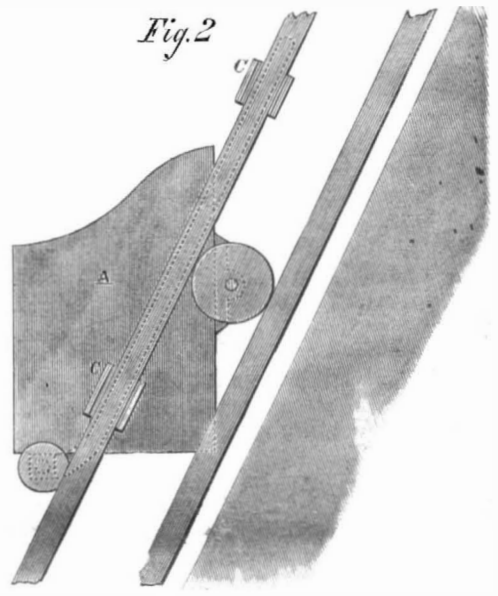


WILLIAMS'S ELEVATOR FOR MINES.

The improvement illustrated in the series of engravings accompanying this article, is designed to facilitate the process of mining, by simplifying the work of extracting and conveying the mineral out of the mine from the different lodes and galleries. Fig. 1 is a perspective view of an ordinary form of the elevator. The power for raising the elevator proper, or the receptacle for the mining products, can be that of man, animals, steam, or water, and be located near, or at a distance from the frame. The elevator, A, of wood, or boiler iron, is slung by a yoke passing under the bottom, to which it is attached by pivots, to allow the vessel to be tilted or inverted. It is guided in its ascent by the rails, B, and the lips, C. A portion of the front rail is pivoted above the chute, D, as seen at E, and where it connects with the lower portion, is curved to fit a corresponding curve on B. By means of the lever, F, and arm, G, this upper portion can be detached from the lower part, closing the vertical ascent and compelling the elevator, A, to turn, by means of the roller, H, into the passage to the chute, as seen in Fig. 1, when, by means of the yoke, the elevator is reversed or tilted sufficiently to discharge its contents through the chute. It can be readily seen that by the suspension of the elevator by the yoke attached to its bottom, instead of requiring additional power at the point of tilting, the weight of the elevator is shared by the lifting rope and the incline at I. Soon as the elevator begins to turn over, a portion of its weight is received by the roller, H, and the incline track, I, and the strain on the rope is lessened.

When coal, quartz or other minerals are to be discharged, that portion of the chute shown at K is closed by the lever, L; K being pivoted to the main chute, D. When, however, mud or water is raised, which is not to be discharged into cars or wagons, the chute is placed in the position shown in the engraving, which closes the front opening of the chute and allows the water or mud to pass out at M. To retain and secure the elevator at any point, as the level of a gallery, a simple hook, N, is slung by two lines, which keep it always in position for use. This engages the yoke and secures the elevator in the position, by which it can be readily filled from the hopper, O.

Fig. 2



It can be easily seen that the devices for dumping from any gallery and for loading at any point, may be repeated indefinitely, so that the apparatus is adapted for mines having numerous galleries. The hook, N, upon the raising of the elevator, unhooks automatically, so that while it prevents the descent of the elevator, it permits it to rise to another gallery.

Fig. 3

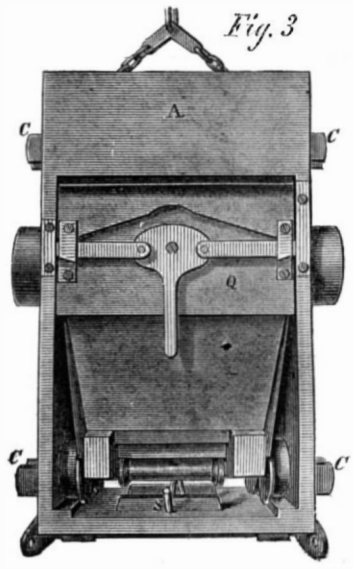


Fig. 2 shows a modification of the elevator, by which it can be made to traverse a shaft at any angle, always retaining an upright position. This is done by a yoke, shown in the dotted lines, which suspends the elevator by the rear of the bottom, and is furnished with a roller that engages with a rear rail.

Figs. 3 and 4 represent an elevator which receives a car loaded with coal, or ore. Fig. 3 is a front view, and Fig. 4 a rear view of the elevator and car. By simple devices the car is secured in the elevator, so that both can be tilted together. The door, Q, Fig.

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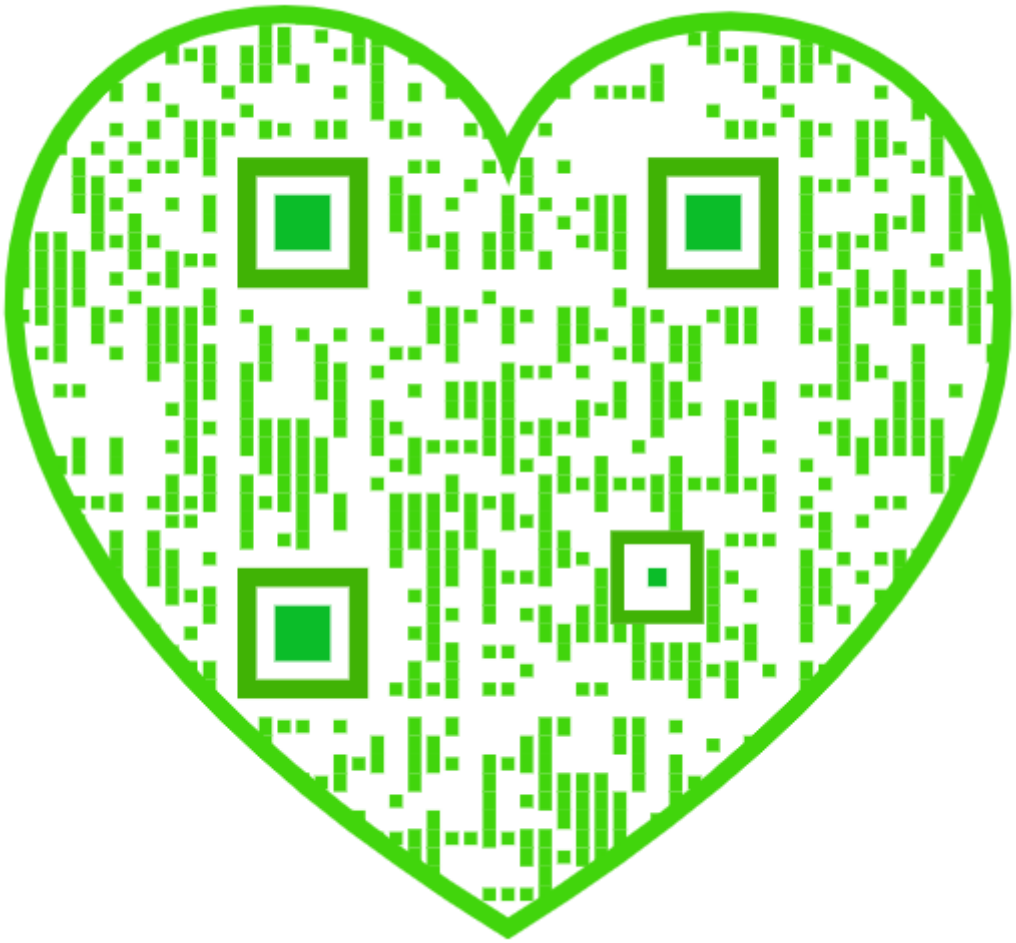


3, secured by double latches, and the lever catch, R, Fig. 4, holds the car in position. A crank lever, the end shown at S, which engages in the space between the two axles, assists in holding the car in place. Cleats running along the sides of the elevator hold the top of the car, so that the elevator can be reversed without allowing the car to escape. By opening the door, Q, and lifting the lever, R, the car can be driven straight through the elevator, so that its suspension at the floor of the gallery will not prevent the passage of the car across the shaft. By the use of the yoke, shown in Fig. 4, the elevator can be completely inverted to discharge soft, cohesive mud or clay.

Fig. 4

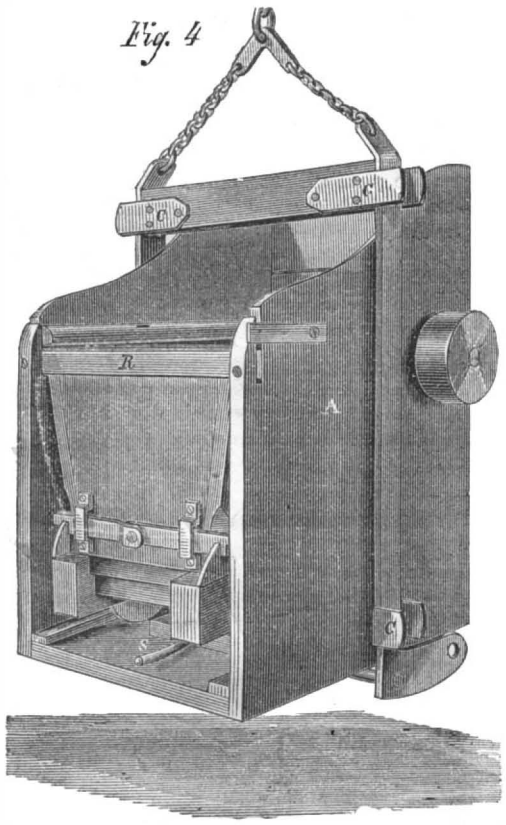
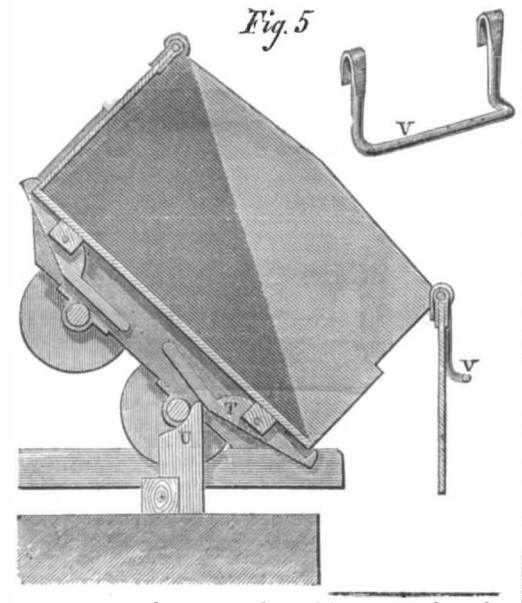


Fig. 5 represents a combined ore and timber car, provided with doors, pivoted at the top, and secured by lever catches at the bottom. By turning the doors up over the top the ends are left open for the conveyance of timber. Closed, the car is adapted for ore, coal or any other material. The engraving represents the car in the act of discharging a load. The long end of the lever, T, engages the abutment, U, which stops the car and opens the door. The hook, V, hangs on the door, and is intended to receive the propelling force of the hand nearer the wheels than the top, so that in meeting any obstruction on the rails it will not tend from the center of gravity, but will ride over the obstacle.

Fig. 5



The practical miner will readily see and understand the varied advantages of this combined apparatus. From its rapidity of operation it is admirably adapted to raising water from mines; it can be employed in coal yards in delivering coal, and can be used in loading or unloading ships or boats with coal, requiring the services of only one man where three are now employed.

It is the subject of two patents, through the Scientific American Patent Agency, dated July 17, 1866, by George Williams, of Sterling, Colorado, Ter.

Patents have been secured in foreign countries also through the Scientific American Patent Agency.

Mr. Williams is temporarily sojourning in New York, and for a few weeks letters will reach him addressed to the care of this office.

[Special Correspondence of the Scientific American.]

THE WORCESTER MECHANICS' FAIR.

WORCESTER, Oct. 8, 1866.

In my last letter I gave you a brief summary of the attraction at the Mechanics' Fair in this city. It has just closed after nearly three weeks' session, and was a most successful exhibition. In addition to the articles mentioned in my previous letter, there are many deserving of at least a brief mention which, with your permission, I will proceed to give them.

LAMB'S KNITTING MACHINE.

This now celebrated machine was shown in operation. The quality of work done by it is certainly beautiful, not only beautiful but durable and reliable in all respects. It will knit *any thing*, and that tells the whole story. I saw a very modest and attractive young lady at work upon it, and therefore examined it with much care and circumspection. She knit me a scarf, and I paid her for it, so this notice is entirely gratuitous and unsolicited, being a simple act of justice to a meritorious invention. The machine runs very easy, being operated by a crank, and is sold for $65, and if I was in the family line, as much as I used to be, I should certainly have one. The factory is in Springfield, Mass.

CHASE'S MICROSCOPE.

This is a simple and useful little instrument for magnifying natural objects, such as insects, etc. It is also valuable for detecting counterfeit money, as the lines in the engraving are easily distinguished from genuine; exhibited by O. N. Chase, Boston, Mass.

ETHAN ALLEN'S GUNS.

A splendid case of fire-arms was shown by Ethan Allen, of Worcester, Mass. They comprise breech-loading rifles, shot guns and pistols of surpassingly beautiful workmanship. They have just commenced the manufacture of Damascus barrels, and have been exceedingly successful. A shot gun shown had that beautiful mottled exterior, peculiar to this style of workmanship, the finish being brought out in great strength. They make small pistols also that load at the breech, and can be carried in the vest pocket; handy things for one of Sylvanus Cobb's heroines to pull out when the invariable "villain" appears on the scene. They also make shot guns which are sure fire, and as certain to kill as a fifteen-inch gun, at point blank range.

The awards of the Committee have made considerable excitement among the parties interested, medals being distributed without discrimination and "diplomas" being scattered about with a perfect looseness. The value of the "diploma" to a firm which transacts thousands of dollars' worth of business in the course of a year, and which has spent large sums to keep its tools running at the fair, is certainly not very great nor very satisfactory. But who shall decide when the doctors disagree? Bronze medals also were distributed to various individuals who did not value them, and to some who had no earthly right to them, but if the Committee's conscience is sound on this point, mine is. The fair was a complete success, and I hope there will be another next year.

The First American Fire-arms.

As early as 1748 muskets were manufactured in Massachusetts. They were made by Hugh Orr, on the order of the Province of Massachusetts Bay, at his shop in Bridgewater, Mass. He built five hundred for the colony, which were deposited in Castle William, and when the British evacuated Boston they carried off most of them. Hugh Orr came from Renfrewshire, Scotland, at the age of twenty-one, his only possessions being a knowledge of the gunsmith and locksmith trades and a bundle tied in a handkerchief. He died in 1798, at the age of eighty-two. During the war of the Revolution he cast iron and brass cannon for the Continental army, with calibers of from three to forty-two pounds. They were first cast hollow and bored, but Mr. Orr introduced the method of casting them solid and then boring, which insured a more perfect and a stronger piece

[For the Scientific American.]

WEST ALBANY LOCOMOTIVE WORKS.

We were favored a few days since with a visit to the Locomotive Works of the New York Central Railroad, at West Albany, and although we had heard much of them, yet we were agreeably disappointed in finding them of greater magnitude and completeness than we had anticipated.

The location of the Works is admirably chosen, being about three miles from the city, on high ground, where fresh air and an abundance of room are always enjoyed

The buildings are new and of immense proportions. They are built of brick and roofed with slate. They are admirably arranged with reference to each other, the various shops being situated in the most convenient manner possible. There is ample room between the buildings for roadways drives, etc.

The grounds round about present a most pleasing and attractive appearance. They are tastefully laid out, with drives and walks; and on the south of the Works, at the foot of a hill covered with a beautiful pine grove, flows a quiet, winding stream, which gives to the whole scene an air of beauty and repose.

Instead of encountering great piles of broken cars, scattered parts of used-up locomotives, scraps of old iron and masses of unaccountable *débris*, all is so neat and orderly without, that one would almost fancy he was approaching the grounds of some Shaker settlement. There is absolutely a place for everything and everything in its place. There is a place for superannuated cars, and there you will find them. There is a place for scrap iron, and you will find it all there. There is a place for shop sweepings, and you will find them all there. I was told, on being shown a large mass of these scraps, that what a speculator had offered fifty dollars for, was melted up at the Works, and yielded fifteen hundred dollars worth of metal.

Inside of the buildings and workshops, the same order and good taste prevail as outside. The shops are spacious, well ventilated and well lighted. There is nothing here wearing a gloomy, dingy aspect. Every room is light, cheerful, and clean. Cleanliness, in fact, pervades every department. In the foundery, oil room, and locomotive shop it is the same.

The machinery is of the most perfect of its kind. I have visited many engine rooms on board steamboats, steamships, and at various works about the country, but have never seen equaled the one at these Works. It is a room about thirty feet square, with yellow-pine floor, as smooth and clean and bright as a Shaker dancing hall. The engine is a beam engine, and a perfect model of its kind. It would seem almost impossible that a machine in daily use could be kept so perfectly clean and bright in every part. The room is rendered doubly cheerful by having its spacious windows filled with some of the choicest plants.

The present master mechanic of the road, Mr. C. Manning, has been in charge of the Works only about a year, but has introduced some features which we heartily commend to the consideration of all master mechanics. In most shops of the kind, some of the workmen may be seen with huge pipes in their mouths, enjoying the luxury of a smoke while at work. This is not allowed here. No smoking during working hours. A whole train of evils is thus broken up. The tool room was, to us, the object of greatest interest and commendation. Instead of the tools being scattered about the shop, or kept in a hundred different tool chests and drawers, there is a small, convenient room fitted up at one end of the machine shop, and all the tools are kept there. There are inclined shelves arranged about the room and the tools are placed on these in

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the most perfect order. There are shelves for drills' and a place for every drill; and the drill is numbered to correspond to its place. Any particular tool is as readily found as a book in a well-arranged public library. The drills and taps are all made after the United States standard. The size of each drill or tap is marked on the head.

Every tool is polished and perfect. There are two or three men employed in this room whose business it is to furnish the workmen the tools they call for, and charge the same to them. When the tools are returned their condition is noted—"broken," "dirty," etc. When the tools need sharpening they are sent to the blacksmith shop in boxes, and when sharpened are returned to the tool room. By this means the tools are always in good condition, and much time is saved.

A steel locomotive is in process of construction by Mr. Manning, the first of the kind ever made. The steel is from the Troy Bessemer Steel Works.

A new method of tempering steel for springs has been invented by Mr. Manning, on which he has recently secured patents. It is a matter of great importance to railroads. By his method, a better spring is made from less than half the steel usually employed. These springs are now being introduced on the New York Central Railroad.

There are many features about these Works we should be glad to mention, did space permit. All parties interested in mechanical enterprises can spend half a day agreeably and profitably at the West Albany Locomotive Works.

J. Wesley Carhart.

Troy, Oct. 1, 1866.

Jamaica--A Field for Inventors.

A correspondent, writing from the island, furnishes a number of interesting facts in relation to this country, concerning which, as the writer justly observes, little is known beyond the fact of its gradual decline.

The productions of the island are easily mentioned. Logwood always finds a ready market. Cotton has been triedand failed, growing into bush in the wet parts, and perishing for want of rain in the country around Kingston. Tobacco pays well when properly cultivated, but enough is not now produced on the island, to supply even its own inhabitants. The cocoanut grows abundantly near the coast; one estate mentioned, has one hundred acres of them well fenced in, the grass underneath the trees serving for pasture.

Corn and peas grow several crops per year, but cannot be kept for any length of time, so that prices range from fifty cents to two dollars per bushel.

The great evils of Jamaica are, no market for home consumption on a large scale, and the limited number of the articles of export, and the unreliability of profit, governed by the prices in England.

A new branch of industry, which promises well for Jamaica, is the increasing demand for bamboos, for the manufacture of paper in the United States. Any one who would introduce cheap machinery for converting these into pulp on the spot would make a fortune.

It is the difficulty arising from the carriage of the raw material to the wharf on the inferior roads, that prevents more people from engaging in the trade. None but the most valuable articles can stand the expense of going over hilly roads without swallowing all the profits. On the mountains the most beautiful hard-wood timber is found, but the demand is so slight that it would not be profitable to transport it to market, for the paths are so rough that the use of the block and tackle is often required.

The want of small portable saw mills to saw boards, fuel for steam boilers, or staves for hogsheads, is referred to by our correspondent, the usage now being to allow a stick to project a couple of feet from the fire, to save labor. Rotary engines for water and still-house purposes are also needed. Let inventors advertise in the island papers and appoint agents. Jamaica has also a vast quantity of fibrous plants, penguins, manilla, and the barks of many trees, which are now applied to no practical use on a large scale. If now any one would introduce machinery to clean the penguins, six feet in length, of the fleshy matter, quickly and thoroughly, it would be a source of great profit.

In reply to our correspondent's inquiries, we would state that tubular boilers are fast taking the place of the flue boilers, and are being universally adopted. The plan of Mr. Wye Williams, of introducing air behind the fire bridge, has been advantageously and extensively employed, and is highly recommended.

MISCELLANEOUS SUMMARY.

It is said that an artificial ivory is now made in France from a paste of *papier-maché* and gelatin. Billiard balls formed of this material, though barely a third of the price of those made from real ivory, are yet so durable and elastic that they can be thrown from the top of the house on to the pavement, or violently struck with a hammer, without injury. With this same paste, to which the name of Parisian marble is given, among many other things, the finest and most complicated moldings for ceilings can be made, or capitals of columns can be constructed in any color so as to resemble the most valuable marbles.

[In the United States various substitutes for ivory have been proposed, such as preparations of india-rubber or compounds of bone shavings with clay and suitable acids, but neither of these compounds has been fully equal to ivory, and the field is still open for our inventors. We understand that Michael Phelan, the celebrated manufacturer of billiard tables, has endeavored for some years past, to obtain a substitute for ivory from which to make billiard balls. Messrs. Phelan & Collender of this city, offered through these columns, not long ago, $10,000 for the patent of some artificial substance which could be used for billiard balls, and which would cost less and be equal to ivory.—Eds. Sci. Am.

An experiment was recently tried in England to ascertain the cost of transporting goods by steam engines on common roads. The work performed was the hauling of three wagons loaded with fifteen tuns of lime, sand, and coal, twenty-six miles, the entire weight of the train being twenty-one tuns. The train occupied twelve hours and a-half in the journey, including thirty-three minutes' stoppage. This was a speed of two and one-sixth miles per hour. The coal consumed was 2,576 pounds, and the expense of the journey was, for tolls, $10 54; coal $5 67; oil and waste, 84 cents; labor, $3 13; wear and tear and interest, 94 cents—total $23 01. This is equal to a cost of but six cents for moving one tun one mile, nearly one-half of it being tolls collected by the road companies.

The first iron works in this country were established near Jamestown, Va., in 1619. In 1622, however, the works were destroyed, and the workmen, with their families, massacred by the Indians. The next attempt was at Lynn, Mass., on the banks of the Saugus, in 1648. The ore used was the bog ore, still plentiful in that locality. At these works Joseph Jenks, a native of Hammersmith, England, in 1652, by order of the Province of Massachusetts Bay, coined silver shillings, sixpences, and threepences, known as the "pine tree coinage" from the device of a pine tree on one face.

The Paris Exhibition.—We would call attention to an advertisement in another column of Dr. Evans, of Paris, who proposes to collect and exhibit, at the great Exhibition, sanitary and surgical articles which were adopted and used in the late war. Mr. Evans is an American, and is dentist to the Emperor, and possesses unequaled facilities for successfully carrying out his purpose.

The gold and silver products of the United States for the year 1860 have been estimated at from eighty-two to one hundred and six millions. California producing twenty-five millions; Montana, eighteen millions; Nevada, sixteen millions; Idaho, seventeen millions; Oregon, eight millions; Colorado, seventeen millions; other sources, five millions.

A market report dated Boston, January, 1719, shows that deer skins dressed for clothing were regularly quoted. Those dressed by Indians sold for five shillings a pound, while those dressed "in oyle" by the whites, brought eight shillings, sixpence.

Sweet oil rubbed on the skin is said to be a sure antidote for ivy poison.

Near Basingstoke, in England, the ancient Roman and British capital of southern England, some excavations have recently been made which have laid bare a Roman street, with another smaller one running from it. Two large Roman houses, with tesselated pavements, the site of an amphitheater, and a portion of the walls surrounding the ancient capital, have also been dug out. Several coins, of periods anterior to the Christian era, have been found, and a brick, with parts of an inscription upon it.

Test papers are made by dipping unsized papers into a solution of a vegetable matter which changes color when exposed to the action of an acid or alkaline solution. The paper after being gently dried, is cut into slips of suitable size. By dipping the appropriate test papers into any solution, we can ascertain whether it is acid, alkaline, or neutral. Litmus and turmeric are most commonly used as a coloring matter—litmus for the detection of acids, and turmeric for that of alkalies.

The new anemometer at Greenwich Observatory consists of a circular plate, having an area of two square feet, supported vertically on eight springs. It has a directing vane which always keeps it facing the wind, and the deflection of the springs according to the force of the wind, is registered on a revolving table in the room below.

The public debt of the United States, on the 1st of October, was $2,573,326,941, which shows a decrease of over twenty-two millions in the month of September. The Government holds $86,000,000 in gold and $41,000,000 in currency now in the treasury.

The English river steamers are not provided with engineers' signal bells, but the captain conveys his orders to the engineer by means of a boy, who is stationed at the entrance of the engine room to repeat the word.

English Patents.—It appears from the report of the Commissioners of Patents, that in the year 1865 there were 3,386 applications for patents, of which 2,186 passed the seal. The receipts of the Patent Office amounted to £115,340, during the year 1865.

The tunnel under the Alps has reached 7,615 feet in length on the French side and 11,285 on the Italian. At the present rate of progress five years will be required to complete the work.

One thousand miles of telegraph are now in operation in New Zealand, while a sub-marine line, a branch of the great Anglo-Indian line, is to be completed next year.

The capacity of iron ships built on the six principal rivers of England, during 1866, amounted to 408,206 tuns of new vessels.

The wires of the Russian-American Telegraph have been extended a distance of 715 miles above New Westminster, in British Columbia.

The latest antiquarian sensation is the discovery of an ancient city in southeastern Africa, believed to be the Ophir of the Scriptures.

The report of the Commissioner of Agriculture estimates the corn crop of the United States, this year, at more than a thousand millions of bushels.

Over four hundred thousand dollars of mutilated fractional currency are destroyed by Government every week.

The principal manufacturer of soda water, in New York, gets out 3,000 gallons per day throughout the season.

The London Water Works Company offer to supply large consumers at three cents per tun, or twelve cents per thousand gallons.

By using delicate gold electroscopes, indications of statical electricity have been obtained from living blood, nerve tissues, and muscular fiber.

A raft containing 2,000,000 feet of choice pine lumber and valued at $50,000, was recently lost on lake Huron.

One of the galleries in the Paris Exposition will be devoted to the display of human skulls.

A French sugar maker applies the principle of endosmose to separate the sugar from beet molasses.

Bath brick are now being manufactured in Stratford, C. W. They are said to be of excellent quality.

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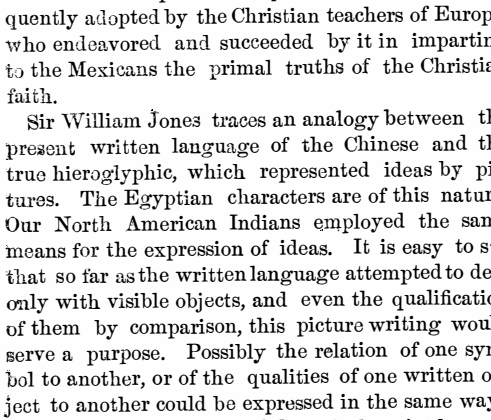
THE ARABIC NUMERALS REPRESENTATIVE, AND NOT ARBITRARY CHARACTERS.

It can hardly be successfully disputed that the first methods of expressing ideas to the eye were by means of figures which were, in some measure, representations of those ideas. Such was the picture-writing of the Aztecs, by which their rulers were informed of the appearance, character, numbers and supposed designs of the Spanish strangers. The same mode of pictorial representation was subsequently adopted by the Christian teachers of Europe, who endeavored and succeeded by it in imparting to the Mexicans the primal truths of the Christian faith.

Sir William Jones traces an analogy between the present written language of the Chinese and the true hieroglyphic, which represented ideas by pictures. The Egyptian characters are of this nature. Our North American Indians employed the same means for the expression of ideas. It is easy to see that so far as the written language attempted to deal only with visible objects, and even the qualification of them by comparison, this picture writing would serve a purpose. Possibly the relation of one symbol to another, or of the qualities of one written object to another could be expressed in the same way; but either a phonetic or alphabetical script became necessary to give coherency of expression and facility of interpretation, when the information intended to be conveyed was of a more abstruse and abstract character than that concerning visible objects. But this form of written communication was of necessity confined to those who understood the particular language to which it was adapted, while the representative method was of universal application.

In the representation of numbers, especially, the most expressive characters would undoubtedly be adopted. Numbers depend upon no distinctions of character either in the climate, soil, or scenery of a country, or the pursuits, inclinations, or habits of a people. They are immutable, unchangeable. Therefore, we find to-day every enlightened people using the same characters in their written expression. The Arabic numerals may have been first adopted by Europeans because of their immense superiority over the cumbrous Roman system; but its originators probably intended each character to express the number it was used for. Let us look at this subject for a moment critically.

Of course it can be seen that one straight line, as in our figure 1, represented that number. The starting appendage was undoubtedly added by carelessness in writing it, the pen being brought close to the surface before the downward stroke was given, and in preparing for that stroke making the preparatory upward hair line. Now let us, by means of the following diagram, see if the succeeding characters can be as successfully found to represent the numbers they are designed to express.



Let us analyze these characters by the light of common sense and the natural movements of the hand in writing. In tracing the formation of the 2 we have supposed that two horizontal lines, instead of two vertical lines were used; but if this assumption may appear to be too much of an assumption, it may be shown, as in the lower group, that the two upright lines might be corrupted into the present form of 2. The second character of this group is a 2 in a leaning position. But it serves our purpose to assume that originally the 2 was two horizontal lines. Beginning at the left of the top line, in bringing the pen, or other writing instrument, from its right to the left of the lower line, it was perfectly easy, and, indeed, almost unavoidable, when in haste, to leave a connecting diagonal line between. In time this became the accepted form. But as it is easier and more natural to write in curves than in arbitrary straight lines and angles, the form became ultimately that which we now use, ornamented and perfected.

The progress of the 3 can be readily seen. The 4 was a square, made by beginning at the right of the top line and forming, by a left, downward, and a right-hand movement, the three sides, the square being finished by a downward stroke on the right. This was easier than forming the whole square without lifting the pen from the writing surface. The progress of this character can be readily traced.

Looking at the 5 it may be asked why depart from the standard furnished by the 4? Why not add to the 4 by another line? Because the 4 being made in the way just described, and any addition to it being naturally merely a prolongation of one of the lines already existing, it might be difficult, in many cases, to distinguish one from the other. This character was begun, originally, at the upper right hand, but afterward, as in the second example, the upper horizontal line was the finishing stroke. The curl upward of the body shown in the third example was a scratching caused by carelessness in lifting the pen when going upward to give the last stroke. As in former instances, however, it furnished an excuse for the adoption of the present form.

The figure 6 can be traced from its original form to its present appearance without special explanation of the examples given in the diagram.

But the 7 may be somewhat puzzling. Let us consider, however, that to get a simple and convenient form which should represent the number and be sufficiently distinct from the 6 and the 5—one of which the 7 would resemble if another line was added to the 6—a new combination of lines was required. So the upright across the upper horizontal was made to count two intsead of one, as it was bisected by the horizontal. Note the progress of the figure from the exact perpendiculars and horizontals to the present form, the lower portion being gradually simplified into a mere thickening of the stem.

Of the 8 it is scarcely necessary to speak. It is apparent that it is but a double 4, and its change to the present form is easily accounted for when we remember, what is stated above, that it is more natural and easy to write in curves than in right lines and angles.

The 9 is two figures 4 united by a line. The remarks in regard to the lower portion of the 7 will be found applicable to this figure. It certainly is opposed to the idea of representative characters to believe that the 9 is but a 6 reversed.

The last character is styled "naught," or "cipher," both meaning when applied to this figure "nothing." And see how perfectly its form carries the idea when viewed in connection with the others. Each of them derives its power and value from straight lines without curves. This, however, when alone, having no value whatever, is a continual curve without an angle or a right line.

Possibly some may consider these examples and explanations far-fetched, but the writer believes that the more they are examined the more it will appear that the present form of the common numerals is a corruption of what were once merely representative characters.

DOMINUS.

MANUFACTURES IN HARTFORD.

Hartford, Conn., is known the world over for its vast insurance business, but it is not so well known for its manufactures; although the Colt pistol and the Sharps rifle have made it somewhat famous. Still, many who have heard of these weapons never knew the place of their manufacture. The Spencer rifle, also, was first tested in Hartford, and the manufacture was commenced by Hartford men, who owned the patent, in Boston, Mass. This celebrated arm was invented by an employé of the Cheney Brothers, silk manufacturers, whose works are located in Hartford.

The manufactures of this city are varied, and in each department are important from their extent, the amount of capital invested, and the large returns realized. The Colt's Patent Fire-arms Company should, perhaps, head the list. The extent of this concern can be judged from the facts that the flooring of the buildings contains an area of six and a-half acres; that the capital invested is one and a-quarter millions of dollars, and the number of hands employed about fifteen hundred. Sharps's Rifle Factory is another important Hartford concern. The arms manufactured here have proved exceedingly efficient weapons, and have, during our late war, sometimes decided the turn of a battle. They are wonders of simplicity and durability, and are great favorites with those who have used them.

The Woodruff & Beach Iron Works are one of the most complete establishments for the manufacture of stationary and marine engines in the country. Work of the heaviest character can be done here. They have a planer capable of finishing a condenser weighing thirty tuns, steam derricks with a lifting power each of seventy-five tuns. The engines of the celebrated *Kearsarge* were built here. Their engines are remarkable for finish and easy working; those of the *Nipsic* gunboat sustaining a trial of ninety hours at the dock and three months at sea without heating a journal, driving a propeller screw of bronze eleven feet diameter, and weighing 3,500 pounds. The engines of the *Pequot* were built here, on a new plan. The cylinders are curved tubes, segments of a circle, thirty inches diameter. The piston rod is a complete circle, corresponding to the radius of the tube and works on centers. The connecting rod leads to the piston rod without the intervention of a cross head. These engines are reputed to work well.

The belting manufactory of P. Jewell & Sons is probably the largest in the country. It converts six hundred hides into belts every week, using leather tanned at an establishment in Michigan owned by the company. Messrs. Jewell & Sons also manufacture immense amounts of lace leather from Patna hides, from the East Indies, which they cure in salt, alum, and hot tallow, and not by the ordinary process of tanning.

The Cheney Brothers are probably the largest manufacturers of silk goods in this country. They import from China and Japan their raw silk by the cargo, and manufacture it into ribbons, neckties, and dress silks. They have an auxiliary concern at Manchester, about twelve miles from Hartford, the two establishments being connected by a telegraphic wire.

Tobias Kohn is another silk manufacturer, who devotes his attention mainly to the making of sewing silk, embroidery braids, and cords and tassels. He has lately patented a new machine for "twisting, stretching, cleaning, and reeling silk and other threads" (see SCIENTIFIC AMERICAN, No. 16, Vol. XV., current series, page 255), which produces a more even and better-finished quality of silk than is usually found in the market. His braids are considered superior to those of the same style imported.

J. L. Howard & Co. have a large manufactory for car trimmings, which sends its products all over the country, and they are to be seen in the cars of nearly all the principal roads.

Among the new manufactories of Hartford may be mentioned one for the production of toys, and the new concern of Pratt, Whitney & Co., referred to in another column. This company is composed of three young men, all practical mechanics, and more earnestly desirous of permanent celebrity founded on excellence of workmanship, than of present advantage at the expense of workmanlike reputation. Their establishment is a thorough school for the mechanic. Every article that goes from the shop is thoroughly tested and elaborately finished. No sham work is permitted. Their machinists' tools are models of beauty and convenience. They have recently added to their engine lathes Slate's device for turning tapers, the simplest and most efficient contrivance for the purpose we have ever seen.

These are but a portion of the manufactures of this thriving city. There are many others, some of them of great importance, to which we have no time nor space to allude.

A CALIFORNIA paper asserts that a grain of wheat, lately unearthed, put forth a sprout and commenced to grow, having been imbedded for thirteen years.

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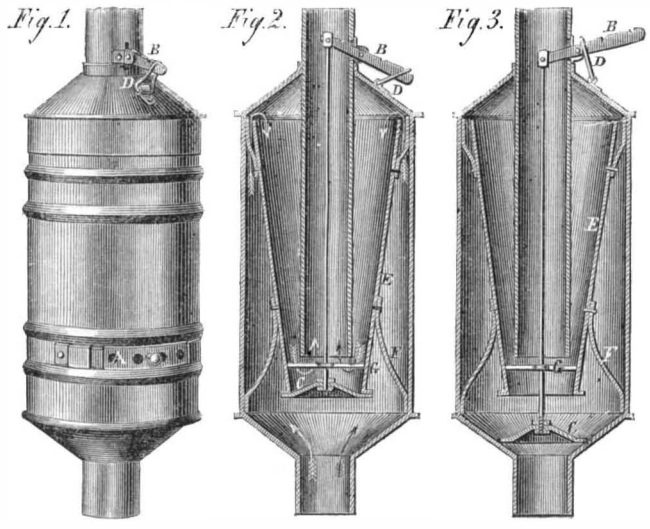
Improved Funnel Drum or Radiator.

The engraving presents three views of a drum to be attached to a stove funnel, for the purpose of collecting a portion of the heat from the gases of combustion, and of regulating the draft of the pipe. Fig. 1 is a perspective view, and Nos. 2 and 3 vertical sectional views of the same.

The drum is made of sheet iron with a section of pipe at each end of the cylinder, rising from the conical top and bottom, to connect with the stove funnel. At A, Fig. 1, is a sliding damper for the admission of external air. At the top is a lever handle, B, which connects by a rod with a damper, C, inside the drum. The lever may be held in any position by the loop hook, D. When the damper, C, is closed on the bottom of the inner cylinder, E, which is sustained in place by four braces, F, the heated gases and smoke from the fire follow the direction of the arrows in Fig. 2, circulating around the interior of the drum and parting with a large portion of their heat before going off through the chimney. G is a guide to keep the rod and damper in position. Fig. 3 shows the damper depressed to prevent the heat from circulating through the drum, when a direct draft is required. The apparatus and its operation can be easily understood by reference to the engraving.



RUTH & DE LONG'S FUNNEL DRUM OR RADIATOR.

Patented Aug. 28, 1866, through the Scientific American Patent Agency. For rights to vend and manufacture address A. W. Beecher or J. De Long, Upper Sandusky, Ohio.

Inlaying.

The process of inlaying iron work with mother-of-pearl by which the higher-priced sewing machines are ornamented, is an illustration of the improved methods of doing work which was formerly the result of close application and patient labor. Inlaying is one of the oldest styles of ornamenting metals, and is now extensively practiced in precisely the same way it was by the Saracens in the time of the crusades and by the armorers of Europe. Fire-arms, daggers and sword blades are often beautifully inlaid with gold and silver. In this work the metal to be ornamented is chiseled to the pattern required, and the gold or silver forced into the recess and secured by riveting or dovetailing. But the sewing machine and the articles of *papier-maché*, which are so beautifully decorated with flowers and fruits composed of the iridescent shell of the pearl oyster and gilding, are ornamented in quite a different manner. Thin scales of the shell are selected for their color, or shade, and cemented to the surface of the material. The rest of the surface is covered with successive coats of Japan varnish, generally black, being subjected to a baking process after each application. When the varnish is as thick as the shell it is polished, the gilding and painting added, and a flowing coat of varnish put over the whole. The surface, if well done, is almost as hard as the metal.

A Singular Land Slide.

The Cleveland, Ohio, *Herald* of Sept. 28th, relates a remarkable occurrence which took place in that city the day before. It seems that there was an oil refinery situated in a ravine on the north side of Hill street, which is filled up to grade across the gorge. About twelve o'clock the man in charge of the works saw about fifty feet of this embankment moving rapidly toward the buildings, which it reached and crushed, filling the ravine with earth to the depth of four or five feet, deposited quite level.

The singular feature of this affair is that it was not the falling of a steep bank, but a vast mass of earth was forced out horizontally by some unknown agency, carried some of it seventy-five yards on nearly a level. There was some water with the slide, but the greater part of the earth which moved was not even wet.

There are various theories among those who first saw the slide. The most common is that it was an earthquake, and the most probable is that it was caused by a large accumulation of water and quick sands under the road, which finally burst their bonds.

New Gas Project.

Dr. Hachenberg, of Coxsackie, N. Y., has recently visited the coal mines, where, with a corps of engineers he has been making observations as to the feasibility of furnishing New York City with gas for light and also for heating buildings, generating steam, and for culinary purposes. He informs us that the plan is regarded as perfectly feasible and likely to prove one of the great enterprises of the day.

Time was when such a proposition as this would have been treated as a visionary scheme, but since the success of the Atlantic Telegraph and other wonderful enterprises of modern science, who dare say that this suggestion is not practicable? The idea, however, is not new. We have been familiar with it for some years, but so far as we know Dr. Hachenberg is the first to examine into the feasibility of the project.

Inventors' Commission Agency.

A correspondent from Worcester, Mass., complains that poor inventors stand but little chance with capitalists who own patents, as the latter can employ "runners," who sell a number of articles at the same time. He says: "It costs each of these individuals (poor inventors), just as much to travel for the sale of a single article as it does a runner to sell a hundred different articles, and the runner has one hundred chances of sale to his one."

Our correspondent suggests, as a remedy, "a commission house at some central place like New York, where inventors can place their goods for sale, and where purchasers from all parts of the United States will gather at least twice a year."

Experience has fairly shown that he who attempts to travel for the sale of a number of articles, unless all in the same line and adapted to one business, does not succeed as well as he who devotes his entire energies to one thing. The theory of a combination of inventors for the exhibition and sale of their improvements is good, but it is to be doubted whether it would be practicable. The professional and individual jealousies which would be excited by fancied injustice or partiality, would tend to break up the association. The nearest approach to such an enterprise is the system of fairs, so general throughout the country, and even in these there is often much dissatisfaction expressed, not only at the awards of committees, but at the arrangement of the articles for exhibition. There are individuals in this city who sell patents on commission, which appears to be the most feasible method of agencies.

No improvement, be it never so superior, will sell itself, but a judicious system of advertising, with the efforts of a competent salesman directed singly and wholly to its introduction, will insure a market for a really useful article.

Correspondence

Nitro-Glycerin.

MESSRS. EDITORS:—I have been intending for some time to send you a few lines respecting the use and manufacture of nitro-glycerin. The explosions that occurred at San Francisco and Aspinwall should have given full warning to every person not to trifle with this greatest of all explosive substances, but those accidents have not had that desired effect, as has already been demonstrated in the laboratories of several very clever chemists, who have recently attempted experiments in its composition on a small scale.

The public should be cautioned in its use, as none but the very best materials, in exact proportions, and skillfully prepared, will make an article which is not liable to accidental explosion. From my knowledge of Mr. Nobel, the Swedish inventor, and my recent acquaintance with the members of the United States Blasting Oil Company, who are erecting works on a large scale for its manufacture, in New York, I feel safe in saying the public may rely on obtaining from them an article which can be more safely handled and transported than gunpowder. The violation of the patents upon the subject is of small importance, but the endangering of life by an imperfection of its manufacture is serious.

I have had, probably, more experience in the use of nitro-glycerin than any other man living—extending back many years—and I intend to prepare for you some instructions to miners how to use it, to the end that accidents may be prevented. I have never had any misfortune to life or person, and there need not be any by its use for blasting purposes. Proper precautions should be taken, but those precautions are not so many as those required to be observed in the use of gunpowder.

Recently, at the Hoosac Tunnel, I removed within three days and with 28 blasts, 60 $\frac{7}{10}$ feet, lineal, 14 feet wide, and five feet deep, far excelling any blasting ever before executed. Electricity was used to produce simultaneous explosion. The above, however, can be increased by another experiment to at least 80 feet. What other substance can effect such a wonderful achievement? The expense was less than the cost of the powder that would have been required to do the same execution.

Nitro-glycerin can be poured directly into the dril' hole, but I prefer to use a tin cartridge, with wooden stopper, firmly fixed, with fuse orifice. The cartridge should not be full, nor should any vessel in which it is placed. Some little space should always be allowed. In cans, a small quantity of water, one-half pint per gallon, should be kept upon the surface of the nitro-glycerin. When in store, the cans need not be stoppered, but the temperature should not exceed 70 degs., though it is not possible to explode it under 360 degs. The floor of the magazine should be plaster of Paris, or earth, never wood. Never use a vessel that has contained nitro-glycerin for any other purpose, and before using it for that place water in it for a few hours, always cleaning the vessel before using it for that purpose.

Nitro-glycerin is poisonous, and care should be taken not to allow it to touch the flesh, as it produces, with some people, a very severe headache. It should not be taken in the mouth. Forty drops have killed a dog, but a reckless man took much more without injury. It does not affect some people, while others suffer intensely with headache. These are simple precautions, and their observance will prevent accidents.

The manner of using it for blasting purposes, and the arrangements necessary to observe for the disruption of the greatest quantity of rock, I will reserve for another letter.

TAL. P. SHAFFNER.

Place of the Piston when the Crank Is Vertical.

MESSRS. EDITORS:—Your correspondent, A. S., gives, on the above question—on page 168 SCIENTIFIC AMERICAN, current volume—a rule which is evidently entirely wrong. He says:—"The hypothenuse of the right-angled triangle formed by the connect

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ing rod and crank, deducted from the sum of the lengths of the two, gives the distance which the piston has receded from the end of the cylinder opposite the crank shaft." When we test this rule by adopting the length of the connecting rod as 4 and the crank 3, we find this hypothenuse 5, this deducted from their sum, 7, leaves 2, which is only one-third of the length of the stroke, as in reality it moves more than two-thirds of the stroke, exactly 4·36 from the end of the cylinder. The editor's indifferent reply, page 115, is at least correct in stating, "that for a short rod and long crank it will never be midway, but for a long rod very near to it," in fact it will be always nearer to the crank shaft than half way the cylinder, but your correspondent's rule brings it always further than this point, which is evidently absurd.

The best test is always to take an extreme case; let the connecting rod be equal to the crank, say four feet, it is clear that the piston rod will be at the end of the cylinder nearest to the crank shaft when the crank is vertical, and will not move during one-half revolution of the crank; after your correspondent's rule the pistons would be at only about one-third of the length of the cylinder. The true rule is this, call the length of the piston rod, m, and the crank n, then the distance of the piston to the opposite end of the cylinder will be represented by this expression—

$$(m+n)-V(m^2-n^2)$$

this expression indicates also that the problem becomes impossible when the crank is longer than the connecting rod, as then $m-n$ becomes negative, and the square root of a negative quantity is impossible.

If the reader desires this formula transposed in words, nothing is simpler. Take the square root of the difference between the squares of length of piston rod and crank and subtract this difference from the sum of these lengths, the result will give the distance of the piston from the extreme end of the cylinder.

Any person who understands elementary geometry may easily demonstrate this rule by drawing the triangle made of the different positions of crank and connecting rod.

P. H. Vander Weyde, M. D.

Philadelphia, 1866.

POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

The Association held its regular meeting at its rooms at the Cooper Institute, on Thursday evening, Oct. 12, 1866, Prof. Tillman presiding.

PRELIMINARY TOPICS.

After a brief epitome of the latest European scientific news, furnished by the chairman, Dr. Bradley introduced a combined rheostat and tangent galvanometer, which he termed the Anthistometer, a full description of which is reserved for some future notice. The economical extraction of arsenic from mispickle, an ore extensively found in some sections of the country, was touched upon, but not exhaustively treated.

PETROLEUM.

Prof. P. H. Vander Weyde, formerly of Girard College, presented the important subject of petroleum and its products; and first as a lubricator. The rapid failing of the old sources, and the necessity for some new supply, make this a subject of the greatest importance. The requirements of a good lubricator are somewhat severe: an article is required that will neither freeze nor evaporate so as to leave a gum; the oil must never become rancid, which is the fault of all lubricators composed of fatty acids and glycerin; lastly, it should be neither too thick nor too thin. Petroleum fulfils all of these conditions, and is alike beneficial for the most delicate mechanism and the heaviest machinery. In composition this substance is a mixture of oils having different volatilities capable of being distilled off in succession. The first product is the peculiar odor from the crude oil; a great proportion of this gas escapes at the wells. By condensation of these first gases, the Professor has obtained a liquid, boiling at a temperature as low as 40 degrees, the evaporation of which produces most intense cold, and has received the name of Chimogene. At a low heat, gasoline, an inflammable explosive liquid, is produced. This may be safely used in metallic lamps filled with sawdust moistened with this liquid. By further increase of heat, naphtha, benzine, kerosene and paraffin are successively given off, till coke alone remains. The analysis of this last product, as compared with coal coke, presents a striking difference; while the latter gives evidence of having been formed of land plants, the former shows conclusively the composition of sea plants. By long continued distillation at a low temperature, hair oil, liniment, and a petroleum castor oil have been obtained. The product of benzole, treated with fuming nitric acid, is now sold for a flavoring extract, under the name of bitter almonds.

UTILIZATION OF REFUSE MATTER.

At the wells, large quantities of acid are employed for deodorizing, one carboy of sulphuric acid being used for every thirty barrels of oil. The combined oil and acid is a worthless material, from which fifteen or twenty per cent of oil may be abstracted; the acid being left may now act upon scrap tin, also a refuse material, resulting in the formation of stannate of soda from the tin, and several valuable substances from the iron; resulting finally with green vitriol.

Belladonna an Antidote for Opium.

A correspondent, a professional physician, in a letter to the *Medical and Surgical Reporter*, details the circumstances of a case where the patient had taken three ounces of opium tincture, or laudanum, which had exerted its effects three and a half hours. Fluid extract of belladonna was then administered in doses of twenty drops every ten minutes, which, in twenty minutes, arrested the progress of the opiate, and in about eight hours the patient was so far recovered as to sit up and converse. The writer says he is sure that belladonna saved this man's life.

Swedish Monitors.—Captain Ericsson, himself a Swede, has designed three monitors which have been built at Motala, in his native country. They are of the latest American pattern, and one if not all, mounts two 15-inch guns in a turret plated with twelve 1-inch plates.

NEW PUBLICATIONS.

Copyright and Patent Laws of the United States, from 1790 to 1866, with Notes of Judicial Decisions thereunder, and Forms and Indexes. By Stephen D. Law.

The necessity for some general summary of Statute Laws and Decisions, which should be accepted as authority in Patent and Copyright cases, led the author of the present volume, a few years since, to the preparation of the American Digest, a book that has admirably satisfied the demand, and has since been recognized as a standard. The volume to which we now refer is not designed to supplant the larger one, but is to be regarded more as a compendium, having the leading points of the latter presented in a convenient form, and referring to it for unimportant explanatory decisions.

For the purpose of comparison and convenience of reference, and for the more perfect understanding of those now in force, the laws which have become obsolete are inserted in full. The incorporation of annotations and notes referring to Judicial Decisions serves to explain the Statutes, and make the work invaluable for Patentees and Inventors. Bound in flexible covers and half-law binding. Published by Messrs. Baker, Voorhis & Co., No. 66 Nassau street.

Report of the Commissioner of Patents for 1865.—We have received from E. R. Jewett & Co., Buffalo, N. Y., advance sheets of the illustrations for the Patent Commissioner's Report for 1865. Messrs. Jewett & Co. have made a valuable improvement in this edition, by adding to each cut the name of the patentee, and the title of the patent, as well as the number. Heretofore the number only was used, and to ascertain the subject of the engraving and the name of the patentee, it was necessary to refer to the volume of descriptions. The engravings, themselves, also appear to be superior to those of former years. We are pleased to learn that the work will be prosecuted vigorously until completed.

Social Science Review.—This valuable Quarterly comes to us in an enlarged form, and containing a number of admirably written articles. A review and criticism of William B. Scott's Essay on Taxation and Reconstruction is an unanswerable defense of the rights of governments to levy taxes on those they defend. A notice of Herbert Spencer, with a portrait, is a just tribute to one of England's most earnest and honest men. The Review is published at 84 Nassau-st., New York, at four dollars per year in advance.

SPECIAL NOTICES.

Robert W. Andrews, of Staffordville, Conn., having petitioned for the extension of a patent granted to him the 18th day of January, 1853, for an improvement in operating the treadles of looms, it is ordered that the said petition be heard on Monday the 31st day of December next.

Notes and Queries

H. C. K., of Mass.—The conducting power of copper, as compared with other metals, shows that it is superior to brass, iron or zinc; the proportions being, copper, 89·32; brass, 44, iron, 37·41; zinc, 36·37. Zinc, therefore, will form a more effective sheathing to your boiler than any other of the above metals.

O. B., of N. Y.—If you use onion juice for ink, the writing will be invisible, but will plainly appear on subjecting it to heat. Dilute sulphuric acid and many other substances have the same property. We do not know any sympathetic ink which turns red on heating.

M., of Pa.—We are aware that wine is in high favor with some as a medicinal agent, but we doubt if it is ever prescribed by an intelligent physician. It is not a depilatory.

D. L., of Ohio.—We know of no specific to prevent the foaming of boilers. The best remedy is to pump often and fire evenly. Your boiler is probably new, and this treatment will cure it in time.

S. S. H., of Mass.—The only advantage we believe double cylinder engines to have over the single cylinder engines, is a greater ease and uniformity of working. We consider the working of steam expansively a system of doubtful economy; at least its benefits have not been satisfactorily demonstrated.

P. P. C., of Pa.—As the overshot wheel is propelled solely by the gravity of the water, it is apparent that the less of the power is expended in friction the more there will be available for other purposes. The lighter wheel is, therefore, the most efficient.

L. G., of Colorado.—The pressure of the atmosphere and the weight of all bodies is greater at the sea level than at an elevation of 8,500 feet. The water wheel at the first mentioned locality will be more effective than at the altitude of Central City, Colorado.

J. A. D., of N. H.—Your suggestion in regard to the employment of compressed air for city railroads is not new. This system has been long thought of, and frequently discussed among other propositions.

J. P., of Ohio.—We are not acquainted with the appearance or qualities of the "sea grass" to which you allude, and cannot say whether it is an indigo-producing plant or not. An experiment of macerating and fermenting the leaves in water, would easily determine the question.

J. H. W., of N. J.—Brass work, after stamping or casting, should be cleaned in a pickle of sulphuric, or nitric acid and water, to remove all surface impurities, washed in water and dried, preparatory to receiving a lacquer. Then for a gold color take seedlac, three ounces, turmeric, one ounce, digested in alcohol, one pint, for a few days, frequently shaking the mixture. Then decant and filter. If not dark enough add anotta or dragon's blood.

A. I. D., of Pa.—There is no metallic substance which will entirely intercept the electro-magnetic current. Lead is the lowest conductor you can use. Glass is so low in its conducting power as to be considered a non-conductor.

J. McG., of Ky.—There is no method known to us by which a cracked circular saw can be made whole. It depends, however, where the crack appears. If near the center a dovetail of steel might put it into shape for further service.

M. K. W., of N. J.—The paints used by toy makers are the ordinary pigments, spirits of turpentine or benzine being employed as a vehicle instead of oil. A coat of thin varnish gives brilliancy and protects the paint.

C. W. J., of Ill.—Light and heat have always been regarded as imponderable forces by the advocates of both theories—that of vibration and that of emanation. Newton, who held that light is an emanation of matter flying outward in all directions from luminous bodies, supposed that this matter differed from other matter in not being subject to the force of gravity; while those who hold that light is the vibration of an ethereal fluid, as sound is a vibration in air, regard this fluid as being free from the attraction of gravity. The passage of light in perfectly straight lines near by the edges of the moon and the stars, without being bent in the least from its course, is absolute proof that it is imponderable.

W. I. J., of Mass.—We are not aware that wood is "saturated" previous to being japanned. On the contrary, it should be perfectly dried in a kiln, or oven, before it is varnished. A white size or priming is made of parchment size two parts, isinglass one part, laid on thin and smooth, two or three coats. Seedlac and resin, equal quantities by weight, dissolved in alcohol, and strained, make a good coating or priming. Shellac dissolved in alcohol, is the best vehicle for all colors except white.

J. B., of N. Y.—You say your mill is on the north side of a ridge with a generally prevailing southwest wind. We judge from this statement that the ridge is interposed between the wind and your mill. If so, to insure a draft, your chimney should rise above the ridge. The data you furnish are, however, not definite enough for us to give a positive opinion. The distance of your mill from the ridge would affect the result. An ordinary fire-box will burn sawdust if the draft is good. Perforated plates should be used instead of grate bars 2. A fly wheel four feet diameter running 200 turns per minute would give but 400 turns to the two foot wheel; hardly sufficient, we think, to drive a small saw efficiently. If run by friction the small wheel should have a perfectly smooth face and the driver, or large wheel be covered with leather. Better use a belt; you will get more power.

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NEW INVENTIONS.

The following are some of the most prominent of the patents issued this week, with the names of the patentees :—

PAPER HOLDER.—D. M. SMITH, Springfield, Vt.—This invention consists in providing a device by which sheets of paper may be held and hung upon a wall or other convenient places.

GONG BELL.—ISAAC A. BEVIN, Chatham, Conn.—The object of this invention is to construct a gong bell of that class in which the clapper strikes twice by one pull of the handle, so that a powerful spring may be employed and a heavy blow may be struck upon the bell, while the pull will be comparatively easy and very effective.

METALLIC BUSHING AND FASTENING FOR BUCKLES.—H. H. MANSFIELD, South Canton, Mass.—The object of this invention is to provide a simple and cheap article by which woven or leather straps may be securely attached to the loop part of a buckle, so that the end of the said strap will be well protected and prevented from raveling, and the most exposed parts of the strap will be prevented from wearing out too fast.

PEN HOLDER.—EDWIN DWIGHT BABBIT, New York City.—This invention relates to a combination of a spring with the barrel of the pen holder in such a manner that the said spring depresses the rear end of the pen and also acts as an elastic bolster for the pen, and also permitting an easy introduction and security of pens of different sizes in the same pen holder.

CREAM CRACKERS.—DANIEL M. HOLMES, Brooklyn, N. Y.—This invention relates to an improved cracker of a very light and friable kind, somewhat similar to those now manufactured by bakers under the name of egg crackers.

GANG PLOW.—S. F. DAVENPORT, Jerseyville, Ill.—This invention relates to a gang plow of extremely simple construction, and which will admit of the driver having full control over the plows.

MACHINE FOR HARVESTING GRAIN.—CHARLES DENTON, Pekin, Ill.—This invention relates to a machine for harvesting grain, whereby the labor of binding and shocking the same is avoided, and is of that class in which the team is placed behind so as to propel or shove the machine along in front of them.

DEVICE FOR RAKING AND LOADING HAY.—H. S. PALMER, Norwell, Mich.—Patented Sept. 25, 1866.—This invention consists in so combining an elevator to a hay rake that hay may be raked and at the same time elevated and deposited upon the load, and in providing or constructing a portion of the elevator in sections in such a manner that they will recede from each other while upon the ground, and approach each other while being elevated, so that a much wider space is raked over than the load or wagon is wide; thus, while the hay is being elevated it is brought transversely to the load and deposited thereon.

COMBINED ROLLER AND HARROW.—JAMES DAVIS, Laomi, Ill.—This invention combines the harrow and roller into one machine, and mounts both on wheels, and is so arranged that the driver may ride, so that the hardest work of the farm is made the easiest both for the attendant and team.

PORTABLE BORING MACHINE.—ROBT. ALLISON, Port Carbon Pa.—This portable machine is for boring or reaming shaft holes in large cast-iron cog and fly wheels, pulleys, spiders, etc., and is especially adapted to the use of machine shops in the interior of the country not provided with lathes of sufficient capacity for this kind of work. It obviates the slow and expensive hand labor of cutting key seats, fitting keys, and staking the shaft true.

DUMPING CARRIAGE FOR COAL, ETC.—M. G. SMITH and W. P. STEVENS, Kingston, Pa.—This invention relates to carraiges for coal and other mines, and other purposes, where loads are to be raised or lowered and discharged.

GANG AND SUB-SOIL PLOW.—ROBT. L. DODGE and E. M. WALKER, Gallatin, Mo.—This invention consists in constructing a gang of plows and arranging them in beams, and attaching them to a frame in such a manner that they may be either used for surface plows or for sub-soiling.

WEEDING AND HILLING PLANTS.—THOMAS BEALE, New Milford Ill.—This implement is for weeding and hilling plants, and is designed to supersede the hoe and other hand implements hitherto used for such purposes, by rendering the labor lighter, a person being enabled to use this implement without stooping.

MANUFACTURE OF POWDER.—FRANK S. ALLEN, New York City.—This invention relates to an improvement in the manufacture of that class of blasting and gun powder which is composed of an explosive compound mixed with any vegetable or other substance such as paper, saw dust, etc.

EVAPORATOR.—J. COOPER, Mount Vernon, Ohio.—This invention relates to a pan for evaporating saccharine and other liquids, which is provided with a sheet-metal bottom and partitions of gradually-increasing hight which are produced either by doubling the bottom up, or, if desired, the bottom can be in several sections, the ends of which are turned up and bent one over the other and over suitable wires used for strengthening the top edges of the partitions.

AXLE-BOX COVER.—F. K. HAIN, Renova, Pa.—This invention relates to an axle-box cover which is provided with two gudgeons intended to work in suitable eyes on the box. One of these eyes is open on top so that the cover when turned clear up can be removed, and in the other uncut eye a spring is placed which presses against the end of the gudgeons and forces the cover up against the inner shoulder of the cut or open eye. This shoulder is provided with a notch into which the cover catches so that it is prevented from opening spontaneously, and the inner edges or shoulders of both eyes form inclined planes which, in combination with the spring aforesaid, render the cover self closing.

BEEHIVE.—SAMUEL TAYLOR, Burlington, Me.—This invention consists in constructing the beehive in sections so arranged and connected together that any one of the sections may be removed at pleasure, and the sections arranged or disposed as may be required, in order to take all the surplus honey from the hive the colony of bees can spare without killing or injuring the bees in the least; the invention also admitting of old combs being removed whenever necessary.

REAPER.—HORATIO WHITING, New York City.—This invention relates to a discharging device to be applied to reapers for the purpose of laying the cut grain in a continuous swath so that it may be readily bound into sheaves, and a rake dispensed with entirely.

SELF-EXPANDING AUGER FOR BORING ARTSESIAN WELLS.—J. T. PARKER, Farmington, Me.—This invention relates to that class of auger in which the tubing of the well is made to follow immediately in the rear of the auger, and owing to its expanding and contracting construction, the auger may be removed at pleasure through the bore of the tubing; it consists in a pod auger divided into two parts and hinged together in such a manner that when boring the auger is expanded by the resistance of the material which is being bored or acted upon.

RUNNING GEAR OF RAILROAD CARS.—B. HEIDERICK, Brady's Bend, Pa.—This invention consists in a novel manner of arranging the bearings of the axles, whereby due provision is made against accidents caused by the breaking of the axles. It also consists in a means for supporting the trucks whereby they will be retained in running position if a wheel should break. And further, it consists in a mode of connecting the two trucks together, whereby the same will be made to adjust or turn themselves in a radial position in turning curves on the road and the trucks prevented from running off the rails if a flange of a wheel should break, one truck serving as a guide for the other.

SAND PUMP.—JAMES BENSON, Bellair, Ohio.—The object of this invention is to construct a pump for removing sand, mud, and reduced rock from an oil or other deep well.

WINNOWER.—FRANCIS FRYE, Time, Ill.—This invention consists in so combining an eccentric to an upright lever which is connected to a screen or fan for cleaning grain as to produce a regular longitudinal reciprocating motion to the screen of a winnower.

DOUBLE SHOVEL PLOW.—JOHN CLARRIDGE, Pancoastburgh, Ohio.—This invention is designed to furnish an improved double shovel plow so constructed and arranged that by occasionally changing one of the shovels, the same plow may be used for cultivating the corn through the whole season.

COMBINED SINGLE ROW CORN DRILL AND PLANTER.—JOHN CLARRIDGE, Pancoastburgh, Ohio.—This invention is designed to furnish an improved machine which may be used for planting corn in drills or hills as may be desired.

SELF-UNLOADING WAGON.—HARVEY BARTON, Black Earth, Wis.—This wagon is intended for farmers' use for hauling dirt, for venders of different kinds of articles such as vegetables, etc., and for all uses where it is desirable to keep different articles separate from each other, as well as to produce a quick means for unloading the wagon.

TOP FOR FRUIT JARS.—J. F. WINCHELL, Springfield, Ohio.—This invention consists in the construction of a cap or cover for fruit jars, etc., with a convex upper face; and in the employment and arrangement of a cam lever and pressure lever upon a clamping or cross piece, in such manner that the cap can be pressed tightly upon the jar, and quickly released from pressure when desired, none of the parts being in any wise damaged by repeated use, but on the contrary, remaining in a proper position for continued use.

MINERS' FUSE LOCK.—GEBHARD HAGENMEYER, Big River, Cal.—The object of this invention is to provide an apparatus by means of which miners and others can light a fuse with safety to themselves and with certainty.

BUCKLE AND RING.—R. C. DUNHAM, New Britain, Conn.—This invention consists of a buckle or ring composed of a metal core covered with or protected by vulcanized india-rubber or other vulcanizable gum in such manner that a strong, cheap and durable buckle or ring is obtained which is not liable to wear out the leather straps, and which lasts much longer than an ordinary leather covered buckle or ring.

BRAIDING CIRCULAR WARP FRAME.—J. DALTON, Williamsburgh, N. Y.—This invention relates to a machine which produces a combined warp and knit stitch applicable particularly for covering skirt wires, cords or other materials, or for the manufacture of lamp wick, lacings, etc. The stitch is produced by a series of needles which are placed in a zig-zag position and which are operated easily by an independent lever in a circular frame, in such a manner that a perfect web can be produced of three or more strands or threads of the same or of different materials, each strand or thread being received by its own and unchangeable line of needles at every revolution.

MACHINE FOR MANUFACTURING MOLDINGS.—THOMAS J. CLOSE, Philadelphia, Pa.—This invention is designed to furnish an improved machine, by means of which composition moldings of any desired length and of any desired pattern, may be easily, quickly, and accurately manufactured.

PROCESS FOR PREPARING AND TANNING HIDES AND SKINS.—GEO. M. HERSEY, Greenbush, Wis.—This invention relates to a new and improved process for preparing and tanning hides or skins, with or without the hair, whereby a soft and pliable leather is produced in a comparatively short time and with little labor.

WINDLASS.—WM. GOODMAN, St. John, N. B.—The shaft in this ship's windlass is like those in common use, having two ratchet wheels and a center cylinder with ratchet teeth for detents. The ratchet wheels are operated on by a pair of jaws with suitable pawls attached to them, the jaws being placed at the end of wrought iron levers, each of which has on its inner end a roller fixed on a cast iron shoe, such rollers working on the surface of a horizontal cam, which is connected to the spindle of the capstan by means of a coupling collar and keys.

BEEHIVE.—ALVA E. ELLIS, Friendsville, Ill.—This invention has for its object the constructing of a beehive in such a manner that perfect ventilation will be obtained, superior facilities afforded for hiving the bees, and also for removing surplus honey from the hive.

BEEHIVE.—HENRY A. TOZIER, Littleton, Maine.—This invention relates to an improvement in the construction of beehives, whereby several advantages are obtained over the ordinary hives, such as a more thorough protection against the bee moth, proper ventilation, security against cold, etc., etc.

CORN CULTIVATOR.—L. O. STEVENS, Pekin, Ill.—This invention relates to a new and improved cultivator, designed for cultivating corn and other crops grown in hills or drills, and it consists in a novel construction and arrangement of parts, whereby the operator or driver has complete control over the implement, and operates the plows with the greatest facility in the prosecution of his work.

CORN PLANTER.—E. R. HOLFORD, Westford, Wis.—This invention consists principally in constructing, in a peculiar and novel manner, a slotted slide or valve to regulate the flow of seed from a corn planter, in combination with a lever and cam or ratchet wheel.

LATHE CHUCK.—D. E. WHITON, West Stafford, Conn.—This invention consists principally in a novel manner of holding and securing the pinion within the body or case of the chuck.

Inventions Patented in England by Americans.

[Condensed from the "Journal of the Commissioners of Patents."]

PROVISIONAL PROTECTION FOR SIX MONTHS.

1,514.—CONSTRUCTION OF REFLECTOR.—William M. Marshall, Philadelphia. June 2, 1866.

2,002.—SMOKE-CONSUMING HEATER.—George W. Fair, Dayton, Ohio. August 2, 1866.

2,041.—DOUBLE HYDROSTATIC SCALES FOR DETERMINING THE LOAD OF SHIPS OR BOATS.—Wilhelm O. Reim, Springfield, Ohio. August 8, 1866.

2,172.—MODE OF PREVENTING EGGS FROM SPOILING.—Jesse K Marsh, Terre Haute, Ind. August 23, 1866.

2,181.—IMPROVEMENT IN ORGANS, PIANOFORTES, AND MELODEONS, ALSO APPLICABLE TO OTHER MUSICAL INSTRUMENTS HAVING KEYBOARDS.—George B. Kirkham, New York City. August 24, 1866.

2,190.—COMBING OF WOOL AND OTHER FIBER.—Cullen Whipple, Cranston, R. I., and Elisha Johnson, Wethersfield, Conn. August 25, 1866.

2,198.—CHURN.—Sylvester F. Schoonmaker, New York City. August 25, 1866.

2,199.—STEAM ENGINE.—John F. Allen, New York City, and Charles T. Porter, Old Trafford, county of Lancaster, England. August 25, 1866.

2,215.—MODE OF PREVENTING OXIDATION OF LEAD BALLS IN FIXED AMMUNITION.—Barton H. Jenks, Bridesburgh, Pa. August 28, 1866.

2,229.—LOOM.—Thomas Robjohn, New York City. August 29, 1866.

2,231.—BREECH-LOADING FIRE-ARM.—Barton H. Jenks, Bridesburgh, Pa. August 29, 1866.

2,233.—LIFTING JACK.—Augustus B. Childs, Rochester, N. Y. August 30, 1866.

2,325.—NEW AND USEFUL MACHINE FOR SCOURING, SLEEKING, OR SETTING HIDES OR LEATHER.—Edward Fitzhenry, Oregon. September 10, 1866.

THE MARKETS.

There is no marked change in business matters since our last. The premium on gold continues nearly the same, with a present temporary inflation, and the prices of almost all commodities are steadily maintained. Money is plenty, and paper is sought for at five and even four per cent. Buyers purchase for immediate consumption, the general expectation of a change in values inclining to caution. For this, among other reasons, there is little disposition toward speculation. It is a gratifying fact that up to Sept. 30th, our public debt has been reduced $183,916,334, while we have in the treasury $86,259,909 in coin. There has been somewhat of a decline in flour and wheat, but most other articles of prime necessity maintain their former prices.

ASHES—Pots are in demand, but the supply is limited. Prices, $9 75@10 00 ₱ bbl. Pearls are scarce.

BRICKS—Common Hard, $12@$13. Croton and Philadelphia are $16@$17 for the former, and $50 for the latter.

COAL—Foreign scarce and in demand. Lehigh, at Elizabethport, $7 50. Cumberland, at Georgetown, D. C., $5 50. Freight on Cumberland $2 25. Stove retails at $7 50@$8 50.

COFFEE—Demand for Rio. Laguayra, 18½@19c., gold; 26c., currency. Costa Rica, 20c. Java, 25½c.

COPPER—Detroit, 31@31½c.; Portage Lake, 31½c.

COTTON—There has been a continued active speculative and spinning demand, and prices have further advanced 2c. ₱ lb, and in some instances still higher prices have been paid. Ordinary, 32½c.; Middling, 38½@40½c.; Good Middling, 41@44c.

FLOUR—Prices have declined 25@50c. Common brands rule from $9 80@$11 75; Ohio fancy brands $11 80@11 85; Genesee, extra, $12 25@$14 50.

GRAIN—Wheat declined 5@10c. Milwaukee, $2 25@$2 31 Amber, $2@$2 88. Rye—$1 05@$1 08 for No. 1 Western; $1 25 for Canada. Barley, $1 35. Oats—50@55c. for Chicago; 55@58c. for Milwaukee; 57c. for Ohio. Corn—89c. for inferior Western mixed; 90@91c. for shipping, 96c. for choice White.

IRON—Scotch Pig, scarce. Prices have advanced. Glengarnock, $52@$53. American $48. Bar refined, $105@107 50

LATHS—Are firm, with sales of Eastern at $4, three months.

LEAD—Market dull. Pig 10¼ currency. Bar, 11; and Sheet and Pipe, 11¼c.

LEATHER—The market for Hemlock Sole is very firm, with a fair demand. We quote Rio Grande and Buenos Ayres Light Weights, 32½@33c.; Middle do., 34½@36; Heavy do., 37@38; California Light, 32@32½ Middle do., 34@35; Heavy do., 36@37; Orinoco, etc., Light, 30@31½; Middle do., 32@33; Heavy do., 31½@33; Slaughter Upper in Rough, 38@36.

LIME—The market for Rockland is steady at $1 70 for common, and $2 10 for Lump, cash. Rosendale Cement, $1 75, cash.

LUMBER—The market for Eastern Spruce and Pine is moderately active, with sales at $21@a$24, usual terms.

MOLASSES—Centrifugal and Clayed Cuba, part mixed, 45@47; Cuba Muscovado, 48@51½c. Barbadoes, at 58. Porto Rico, 56@75c.

NAILS—Cut may be quoted 7@7¼c., the lower rates for lots of 500 kegs and over—8d., 10d., 3d., and 3d. Fine are very scarce—Clinch, 8½ (8d are very scarce); forged horse, 32; pressed do., 22@24: copper, 50; yellow metal, 32; zinc, 20; and wrought ship and boat spikes, 7@8, cash.

SUGAR—Refining Cuba, 10¾@11½. Refined, 16⅜@16½ for hard; 15¼@15½, soft white; 14¼@14⅜, yellow. Crushed and granulated 16c.

WOOL—The demand for low and medium fleece has been moderately active, but at the low prices previously current, and the market is rather weak for all kinds, except those suitable for combing, which are scarce and wanted at slightly improved quotations.

ZINC—9½c. less 4 per cent. for gold; 13½c., currency, for Lehigh.

RECEIPTS.—When money is paid at the office for subscriptions, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a *bona-fide* acknowledgment of the reception of their funds.

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Improved Wheeled Litter and Ambulance.

The war created a demand for appliances to be used for the sick and wounded, appliances of which our service was, at the opening of the struggle, lamentably deficient. The invention illustrated in the engravings appears to be the best and most comprehensive device which has yet come under our observation. Nothing has been omitted that could be employed to diminish the torture of a wounded soldier or sick person. Surgeon General Barnes says that this litter should be used not only in the army, but should be adopted in all large towns and cities for conveying the injured and sick to their homes or the hospital. As will be seen, by examining Fig. 2, it can be put into a compact form for transportation when not in use.

Two longitudinal bars, with transverse connections, form the frame of the litter. These lengthwise bars have handles at each end to give facility for using the device as an ordinary stretcher. An axle can be added with wheels supporting springs, when the distance from the place of injury to the hospital is too great to be performed in the usual manner. The litter then becomes an ambulance.

The longitudinal bars, A, are hinged at B, at which point is a sliding bolt, which rigidly secures the two pieces in one. The legs, C, are also hinged to the bars, A, and secured in a vertical position by the semicircular braces, D. At E is a sacking to support the person, which is attached at one end to a sliding bar, by which it can be fixed in a level or concave form, as the patient may require. The arm rests, F, are flexible and adjustable, and can be made to meet over the person at any convenient angle, for resting a wounded arm or arms. The head is supported on a flexible sacking, which also can be adjusted and secured as required, the space, G, under the head forming a receptacle for articles necessary for the patient. At the foot is a cloth, H, rolled, which can be used to cover the person. The

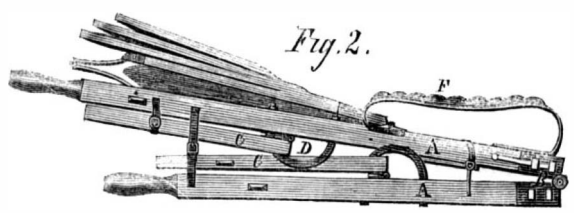


Fig. 2.

top of G is an expansion top similar to that of a chaise or buggy.

The axle is made in two pieces, jointed at the center, and, when straightened, held by a sliding sleeve covering the joint. The wheels are held on the axle by screw collars which screw into the inner end of the hub, so that there are no nuts to be lost. The springs are attached to the bars by means of blocks having dovetailed or T grooves, which receive corresponding tenons on the spring blocks. The whole apparatus can be made ready for the reception of a patient in a few seconds, and can be as quickly folded for transportation.

Patented Aug. 7, 1866, by Brevet Brigadier General Charles H. Tompkins, U. S. A., Washington, D. C., who will furnish all additional information.

The Rose.

The trade in roses, as is well known, is of considerable importance in France. Rose trees are cultivated in different parts of the country in open fields, just as turnips or cabbages. Thus, there are 500,000 rose trees near Orleans, 200,000 near Metz, 1,000,000 near Angers, 1,500,000 near Lyons, 2,000,000 near Paris, and 2,000,000 in the thirteen communes of Bri-Comte-Robert. The varieties called Rose-The, the Bourbon, and Mousseuse flourish particularly in the environs of Paris and Orleans. These flowers are raised for distillation into extracts, used in perfumery as rose water and as a constituent of Eau de Cologne. The ottar of rose is manufactured mainly in the East and is exceedingly valuable. The city of Damascus is almost environed with rose gardens.

VULNERABILITY OF IRON-CLADS---THE SHOEBURYNESS EXPERIMENTS.

A trial has lately been made at Shoeburyness, England, with a nine-inch muzzle-loading Woolwich gun, firing a 250-lb. Palliser chilled shot, which is said by the London *Times* to demonstrate that no iron-clad can now be considered invulnerable. The facts, as nearly as can be ascertained, are, that a target built of eighteen inches of teak, faced with plates

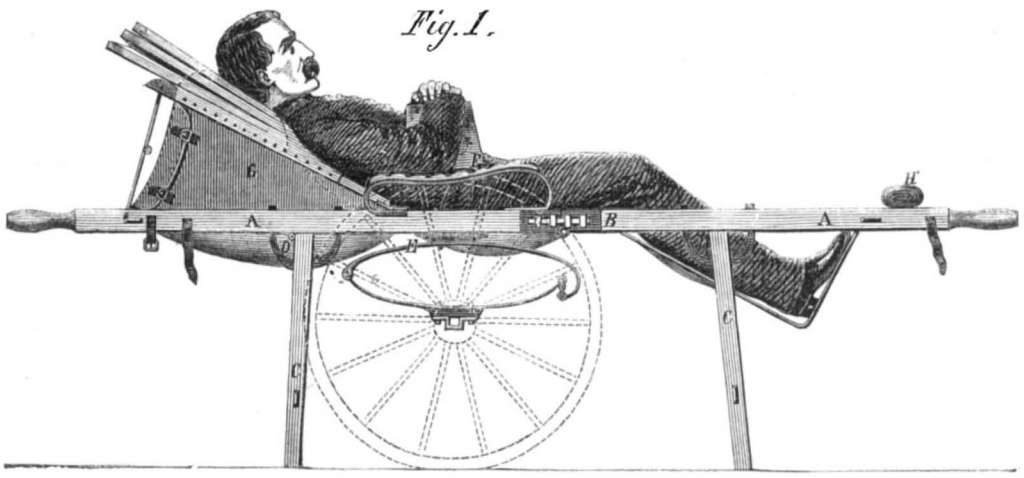


Fig. 1.

GENERAL TOMPKINS'S WHEELED LITTER AND AMBULANCE.

of solid rolled iron, eight inches thick, and backed by a plate of iron three-quarters of an inch thick, was pierced through and through by a nine-inch Palliser shot, or shell, weighing 250 pounds, propelled by a charge of 43 pounds of powder. From this bare fact the *Times* draws the inference that the supremacy of iron-clads and monitors no longer exists, and that as this was an English gun and an English shot, the lost sovereignty of the seas is restored to Britain.

But there are some considerations which do not seem to have entered into these sanguine calculations. We are informed that the target was exactly at right angles to the line of fire, and we are not informed as to the distance of the gun from the target; two very important points in the decision of the question of iron-clads against guns. It is not often that the side of a ship is presented to the guns of an enemy so that the shot shall strike fair. Our iron-clads "tumble home," offering a diagonal target, and the turrets of our monitors present always a segment of a circle for a mark. It may be doubted, also, whether this Shoeburyness target presented a resistance equal to that of our monitor turrets. They are made of twelve inches of iron and may be increased to twenty-four. It certainly makes some difference whether a shot strikes against a vertical wall or against one inclined at an angle or curved on a circle. Distance from the object is also another point of difference.

But the shot, from any point of view, was a remarkable one. The gun was smaller than those used in our Fortress Monroe experiments, and the charge of powder less. The effects of those trials were of such a nature as to demonstrate the worthlessness of granite walls as a defense against great guns, and those at Shoeburyness seem to indicate great progress in deciding the vulnerability of iron ships.

THE ship-rigged boat *Red, White and Blue*, now creating some excitement in England, is the identical metallic life boat which received the gold medal at the fair of the American Institute in this city last fall.

THE Mobile papers announce valuable coal discoveries within convenience distans of that city.

CLEANLINESS OF TOOLS.

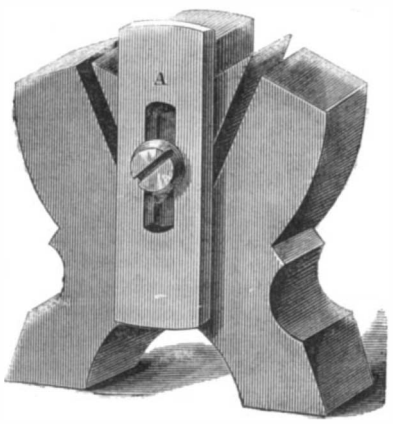
Dirt is a great disorganizer. Cleanly use will not half so rapidly wear a tool as uncleanly abuse. "Gurry" in the machine shop was at one time esteemed a saving ointment, and the workman who could most beplaster his clothes with oil and dirt, whose bench and lathe bore the marks of frequent contact with greasy filth, was considered a valuable hand; too busy to attend to the unimportant matter of cleanliness, and too much engaged with his work to look to the condition of his tools.

It is pleasant to note a change. It is encouraging to see that our master mechanics are unwilling longer to pay a premium on slovenliness. They care but little, perhaps, about the personal appearance of a workman—although he is not so pleasant when he appears as though just fished out of a barrel of petroleum—but it is not comfortable to find a tool, after being used, so coated with dirt that it has to be cleaned before being gaged.

Whenever tools are left coated with grease they gather particles of iron and steel, which, when they are put to use, act as so many particles of emery—grinding and wearing away the cutting edges. Latterly, in well-managed shops, there has been established a department for the care of small tools, and when the workman has done with them he must return them in a clean state, or he is charged with the time employed in cleaning them. The practice is a good one and should be generally adopted.

RUSS'S PATENT KNIFE AND SCISSORS SHARPENER.

The above little implement, which is engraved full size, needs but little explanation to exhibit its advantages. Dull knives and gnawing scissors are an abomination, as every householder and housewife can testify. With this sharpener these commonly used utensils can always be kept in order.



It is a block of hard wood with slots inclined to the central blade, A, the lower ones adapted to the edge of a knife and the upper ones adapted to the bevel of scissors blades. The blade, A, is a piece of very hard steel, the edges beveled to present a cutting surface. The knife or scissors is placed in the slot, and drawn toward the operator, being held, the while, firmly against the cutter. A slot and screw admits of the re-adjustment of the cutter when worn at one point, and it can be readily removed for grinding.

Patented through the Scientific American Patent Agency July 24, 1866, by James J. Russ. For rights and other particulars address Russ & Eddy, Worcester, Mass.

MR. BURNS, a telegraph operator in Worcester, Mass., recently sent 250 words, containing 1,166 letters, in six minutes and seven seconds.

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NEW YORK, SATURDAY, OCT. 20, 1866.

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THE COMBUSTION OF COAL---ECONOMY IN FUEL.

It is unpleasant to see the waste so generally practiced in regard to that high priced necessity, fuel. Our people for generations have used wood as a fuel. Coal, although extensively used, is comparatively a new substance, and hundreds of families who burn it, know but little practically, and understand less chemically, of its properties. It is simply a condensed carbon—condensed as compared with wood—capable of generating an intense heat when properly managed, and liable to disappoint the housewife when not properly managed. It requires a large amount of oxygen to produce perfect combustion, and as we have no ready means of producing this gas in our dwellings, apart from its natural admixture with the other gases which make up the volume of the atmosphere, we must use that atmosphere as a means of combustion.

But some, in the management of their fires, seem to suppose that an addition of fuel will insure an increased combustion, and develop an additional degree of heat. No idea can be more mistaken. Coal, and especially anthracite coal, should be always furnished with a sufficient amount of oxygen to keep the fire bright. It is only smothering and retarding the fire to put in a thick layer of coal, or, as some do, fill the fire box, from a layer of two inches of ignited coal, to its utmost capacity, with fresh fuel. The consequence is, that for a time the fire is choked; until the heat of the lighted or igneous mass has received sufficient vitality from the admission of air to impart a portion of its heat to the new coal.

Evidently, then, it is important in the management of coal fires that oxygen, sufficient to produce combustion, should combine with the carbon; but, as we cannot, except in a limited way, regulate the admission of oxygen, the element of combustion, or, at least, we cannot increase or diminish the amount contained in a certain volume of atmospheric air, it is requisite that we should do the next best thing; gage the amount of fuel subjected to the action of the atmosphere. No more coal should be put upon a fire at one time than will readily ignite and give off a pure white blaze—not a blue flame, which denotes the presence of unconsumed gases—and that the fire should be undisturbed on the top.

This is an important element in the management of coal fires. "Jack Downing" once said, in his celebrated letters, that a coal fire was like a politician, "poke him on the top, his popularity, and he went down. Punch him at the bottom, his character, and he went up." The trouble with some of our politicians now is, that they have so little bottom or character, that if poked they go out, like an insufficiently attended coal fire.

In clearing the grate in the morning there is a quantity of unburned coal, which has been externally subjected to combustion. It is covered with ash, and looks to the inexperienced eye like cinder. It is often relentlessly dumped into the ash box. The fact, in many cases, is, that the lump is only roasted on the outside, not even coked, and is in a better condition for igniting than the green coal. We have stated that coal is a *condensed* form of carbon. The superficially burned lumps found in our grates or among our ashes, sufficiently prove this. But take a lump of anthracite coal from the fire, red hot and all alive. Throw it into water until the ashes are washed from it, and it is black externally, and cool. Take it out and break it open with a hammer and you will find it red hot and glowing inside. This shows that time and a plentiful supply of air are necessary to burn coal, and that large amounts of what we call ashes and cinders are really excellent fuel.

To prove this fact, let any one carefully sift his ashes, throwing out the inevitable slate, which can be readily detected, and start his coal fire on wood or charcoal, kindling his coal fire with the savings. He will find that he can get a good bed of incandescent coal sooner than with green coal on the kindlings. We have experimented with coal for twenty years, both in the house and under boiler, and we know whereof we speak. We shall allude to this subject again, taking up the burning of bituminous coals and the different plans of stoves and furnaces.

MACHINERY VERSUS MANIPULATION.

Our mechanics are continually directing their endeavors to the object of making machinery do the work formerly accomplished by patient labor and skillful manipulation. Their success seems to be but an incentive to renewed effort in the same direction; for no sooner has one succeeded in making the automatic machine do a part of the work of the skilled mechanic, than he, or another, sets about an improvement, usually with success. The file, once a tool in constant requisition for almost every department of metal working, has been superseded by the planer, the shaping machine, and the milling tool. Indeed our founderymen and forgers have become so expert, that they turn out their work so that, in many instances, they leave very little, if any thing for the file to do. So with the cold chisel. Not half the work is done now with the chisel and hammer that was done in former years.

Machines are now in use, in all concerns of any magnitude, which were unthought of twenty years ago. Instead of a corps of old, experienced workmen, whose apprenticeship was a severe drudgery of many years, men are employed whose skill is confined mainly to the running of a machine—placing and adjusting the work and removing it when finished—while the machine itself performs the labor with remarkable rapidity and mathematical accuracy.

On a trip to Hartford, Conn., a few days ago, we were struck with the truth of the above considerations by a visit to the establishment of Messrs. Pratt, Whitney, & Co., who are widely and favorably known as the makers of superior machinist and gun tools. In their establishment—the main building of which is two hundred and fifty feet long, by fifty feet wide, and four stories high—are hundreds of almost self-operating machines, adapted to almost every detail of work, from the forging and casting to the final finishing. A modern machine shop seems like a miracle to one who remembers the experiences of twenty or twenty-five years ago. There is but little of the noise of hammering and the grating of files to be heard. Machinery, almost noiseless, untiringly shapes the thousand different forms, which, when "assembled," make the harmonious and complete whole.

Most of the forging is done by "drops" with dies which, at a blow, form the article desired. At this establishment we noticed a beautiful illustration of the value of this mode of forging. Messrs. P. W. & Co., are contractors for building the Weed Sewing Machine, which uses a shuttle. As our readers probably know, the sewing machine shuttle is a boat-shaped contrivance, about one and a quarter inches long, pointed at one end and blunt at the other. In the middle is a recess for holding the spool or bobbin. The ends of the shuttle are solid. The usual method of making the shuttle is to bend a piece of sheet steel to the form, and then forge the ends separately, which are afterward fitted and soldered in, the shuttle being, therefore, composed of three pieces. But at this establishment it is struck up from a bar of steel in one piece, the recess being formed perfect at one operation. While the cost of this important piece of the sewing machine is very much lessened, its durability is greatly increased.

Another device for saving manual labor is also worthy of notice. The various forged parts of the machines, whether of steel or iron, are subjected to immense pressure by an eccentric press, between two highly polished steel dies, which leave the surface perfectly smooth and susceptible of a high polish. They also condense the surfaces of the metal, making the article more durable and stronger. Whatever may be the form of the piece, dies may be adapted to it so that every portion of the surface can be acted upon. This saves the time and expense of milling.

The needles of the Weed Sewing Machine are straight, and at this establishment are swedged from the steel rod by power, instead of being turned, as is sometimes the case. Their strength and evenness of structure may be understood from an experiment which we witnessed. A machine was started, and, without stopping, sewed successively through sheet lead nearly one-eighth of an inch thick, the top of a cigar box, six thicknesses of pilot cloth, four of bleached cotton, fine muslin, dress silk, lace, and a piece of fractional currency, all without changing any part of the machine.

After witnessing the triumphs of ingenuity in adapting machines to the work of the human hand, one at first fears that the race of thorough mechanics will eventually become extinct; but further consideration shows the fallacy of this idea. Messrs. Pratt, Whitney, & Co., employ some of the best mechanical talent they can obtain. The perfection of the work requires it. The dies and swedges are made by experienced workmen, and finished only by the most patient and pains-taking effort. The gages, plugs, templets, and other tools required to insure perfect accuracy, demand the greatest judgment and skill. But in the inventor's department machinery can never intrude. It is but the creation of the brain of the mechanic. Here he reigns solitary and supreme. Machinery will continue to be his obedient servant, more and more valuable as it is more and more improved, but will never be his master.

Mechanics' and Agricultural Fair.

We have received the prospectus of the first Fair of the Association of the State of Louisiana, which is announced to open in New Orleans Nov. 20th, to be continued eight days. Premiums to the amount of $20,000 are offered, and the other arrangements are projected upon a liberal scale. We notice among the premiums the offer of a gold medal and $250 for the best steam machine for making levees; also a gold medal and $200 for the best and most practical steam plow; a gold medal and $50 for the best reaper and mower combined. All necessary information can be obtained by addressing L. Homes, Mechanics' Institute, New Orleans.

FRUIT JAR.—There exists a very well-founded objection to the ordinary tin fruit can, with its soldered top. It is inconvenient, and not so neat in its appearance, as a nicely-fitted glass jar. John J. Squire, of New London, Conn., has recently secured a patent in this country and Great Britain for a glass jar which possesses excellent features. The top is firmly secured in its seat by an india-rubber band, and is quickly adjusted and easily removed, no sealing process being necessary.

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ISSUED FROM THE U. S. PATENT OFFICE
FOR THE WEEK ENDING OCT. 9, 1866.

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☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & Co., Publishers of the SCIENTIFIC AMERICAN, New York.

58,566.—GATE.—P. M. Ackerman, Webster, N. Y.

First, I claim suspending the sliding gate upon the swinging crane, substantially in the manner and for the purposes herein shown and described.

Second, The swinging crane or frame constructed, arranged and operating substantially as herein shown, and for the purposes set forth, in combination with the sliding gate.

58,567. — MANUFACTURE OF GUNPOWDER. — F. S Allen, New York City.

I claim the within described process of saturating paper or other substance with an explosive compound by boiling the same together, substantially as set forth.

58,568.—BORING MACHINE.—Robert Allison, Port Carbon, Pa.

First, I claim a portable boring machine for boring or reaming shaft holes in cog wheels, spiders, pulleys, etc., constructed and operated substantially as herein described and represented.

Second, I claim the base plate or ring, A, in combination with the vertical boring arbor, B, and guide bar, M, substantially as and for the purposes herein specified.

Third, I claim the vertical boring arbor, B, in combination with the base plate, A, clamping bar, M, or its equivalent and the feeding apparatus, arranged and operated substantially in the manner and for the purposes herein set forth.

Fourth, I claim the guide bar, M M, in combination with the base plate, A, and the boring arbor, B, arranged and applied substantially as and for the purposes herein described.

58,569.—MODE OF SECURING CROSS-CUT SAWS TO THEIR HANDLES.—Emanuel Andrews, Williamsport, Pa.

I claim, First, The removable stop, E, and series of holding places, B3, arranged for joint operation in fastening and liberating a saw plate, A, substantially as and for the purpose herein specified.

Second, A saw handle, B, and so arranged as to allow the removal and introduction of the saw blade, A, by a turning and literal movement without the necessity for passing the end of the blade through the bolt, all substantially as and for the purpose herein specified.

58,570. — VEGETABLE CUTTER. — Francis Arnold, Haddam Neck, Conn.

I claim the wheel, D, with knives cast upon one of its faces and with openings through which the pieces of vegetables and roots pass when said wheel is used with a frame, constructed substantially as herein set forth and for the purposes described.

58,571.—STAGING. — Wm. Arrouquier, Worcester, Mass.

I claim the combination and arrangement with pieces, C C', of the supporting pieces, D D, braces, E E, and adjustable bottom pieces, F F, with their rods, G, for supporting the foot boards, H I, from the window of a building, as shown and described.

58,572.—PEN HOLDER.—Edwin Dwight Babbitt, New York City.

I claim a pen holder constructed substantially as herein shown and described.

58,573.—HORSE SHOE.—Halsey H. Baker, New Market, N. Y.

First, I claim the attachment of the collar, B, to the shoe, A, by means of lips, i, formed upon the tongues, h, of the said collar hooked upon the shoulders, b', by the driving into its place of the filling of the calk, substantially as herein set forth for the purposes specified.

Second, The wedge-shaped projections, *f*, so arranged in combination with the tongues, h, and lips, i, of the collar, B, as to insure the rigid locking of the lip, i, upon the shoulders, b', by the act of driving the filling of the calk into its place, substantially as herein set forth for the purpose specified.

Third, The opening or openings, e, so arranged in relation with the shoulders, b' and with the tongues, h, and lips, i, of the collar, B, as to enable the said lips, i, to be disengaged from the shoulder, b', substantially as herein set forth for the purpose specified.

Fourth, The ice calks, D, arranged in relation with the collar, B, and with the wood or other suitable filling of the calks, substantially as herein set forth for the purpose specified.

Fifth, The combination of the layer or thickness, m, of india-rubber or other elastic material with the collar, B, and shoe, A, substantially as herein set forth for the purpose specified.

58,574. — METALLIC BAND FASTENING. — Arthur Barbarin, New Orleans, La.

I claim the herein described device for fastening metallic bands, the same consisting of a segmental plate recessed so as to have a C shaped and constructed and arranged for operation as set forth, so that the partial revolution of the plate shall effect the release or loosening of the band, substantially in the manner herein specified.

58,575.—DUMPING WAGON.—Harvey Barton, Black Earth, Wis.

I claim the combination of the drops, A B C, rock shafts, D, pawls, E F G, plates, H, I, J, levers, d e f, and springs, K L N, substantially as shown and described.

58,576.—HOUSE BELL.—Hiram Barton, East Hampton, Conn.

I claim the arrangement and combination of the vibrating cap plate spring and stop with the bell and hammer, constructed and operating substantially as described.

58,577. — MACHINERY FOR MAKING NAILS AND TACKS.—O. L. Bassett, T. R. Bearse, and W. B. Wilber, Taunton, Mass.

First, We claim the combination of a carrier or bearer for the tack blank with any one of the cutters, be they more or less in number, used for cutting the tack blanks when arranged and so as to operate together, substantially in the manner and for the purpose specified.

Second, The carrier or bearer for conveying the tack blanks to the die to be headed, attached to either one or the other of the arms to which the cutters are attached, in combination with a forked or other suitable lever, arranged with regard to the said carrier and so as to operate upon it in conjunction with the said cutter arm, substantially as and for the purpose described.

58,578.—CULTIVATOR.—Thomas Beale, New Milford, Ill.

I claim the bars, A A, having the bar, B, pivoted to them, with the spade or shovel, C, attached to the front end of the latter, in combination with the bar, E, connected to the bar, F, which is pivoted to A A, and connected to the pivoted bar, E, through the medium of the rod, b, and guide bar, D, and the scraper, and hilling device, G, pivoted to the front ends of the bars, A A, and operated from one of the pendant, c, by the rod, H, substantially as and for the purpose set forth.

58,579. — SAND PUMP. — James Benson, Bellair, Ohio.

I claim the hinged bail, I, operating in combination with the linked piston rod, E, of the sand pump herein described, as and for the purpose specified.

58,580.—GONG BELL.—Isaac A. Bevin, Chatham, Conn.

I claim the construction of the gong-striking apparatus, substantially as herein shown and described, so that the pull will act between the spring and the striker, all as set forth.

58,581.—SHOVEL PLOW.—Jesse C. Boyd, Milroy, Ind.

I claim the beams, A A, in combination with the upright shovels and handles when connected to the beam, C, by means of the swivels, H H, and attached to the beam, B, by slotted bars, F F, and set screw, t, arranged substantially as specified.

58,582. — BASE BURNING STOVE. — Nathaniel A. Boynton, New York City.

I claim the combination of an outer case or exterior cylinder with an interior cylinder or case which is a reservoir of fuel above the fire-pot, the space between the outer case and the reservoir forming a combustion chamber with which the reservoir is in free communication at its upper portion.

58,583.—GALLOON TRIMMING FOR UNDER GARMENTS.—Ernst Bredt, New York City.

I claim a galloon trimming for under garments and similar articles, formed with a corded and scalloped edge to a fluted or corrugated fabric woven with a heading or center, as specified.

58,584.—GALLOON TRIMMING FOR GARMENTS.—Ernst Bredt, New York City.

I claim the galloon trimming for linen and cotton garments formed with flutes or corrugations connected in the manner and for the purposes set forth.

58,585.—BEEHIVE.—L. C. Bristol and C. T. Alverson, Victor, N. Y.

We claim the relative arrangement of the ventilators, C, with the ventilators, a, and double hives, A B, as shown and described and for the purposes set forth.

58,586.—SAWING MACHINE.—Nathaniel Brockway, Cambria, N. Y.

I claim the segment, I, and gibs, j, and saw, m, in combination, for the purposes described.

58,587. — SAFETY-VALVE TENDER. — Charles F. Brown, Ashly, Mass.

I claim the valve D, with its appendages, the inner cylinder, B, the frame, F, the outer cylinder, I, and hanger, K, or their equivalents, when in combination with the boiler and safety valve of a steam engine, substantially as and for the purposes set forth and described.

58,588.—SEED PLANTER.—C. P. Brown, Shortsville, N. Y.

First, I claim the arrangement of the wind guard, g, or its equivalent, with the delivery wheel, W, substantially as and for the purpose set forth.

Second, The adjustable clamping bar, E, in combination with the wheel, W, and the case, C, substantially as shown and described and for the purpose specified.

Third, The arrangement of a series of complete hoppers in the bottom of the grain box of seed drills in combination with the distributors, substantially as and for the purposes herein shown and described.

58,589.—POWER LOOM FOR WEAVING CONCAVE AND CONVEX SURFACES. — William Breitenstein, New York City.

I claim operating the sectional take-up roller by levers which are set by the jacquard and operated to take up the woven cloth by the beat of the lay or the motion of some equivalent part of the loom, substantially as and for the purpose specified.

I also claim, in combination with the sectional take-up roller, the series of pressure rollers and the frame in which they are hung with its connections so that while each can yield independently of the others the whole of them can be lifted from the take-up roller at once, or the tension of their springs increased, substantially as and for the purpose specified.

I also claim the thread pullers in combination with the jacquard and the intermediate mechanism by which the jacquard is made to determine when the said thread pullers shall be thrown in or out of action, substantially as and for the purpose specified.

And I also claim connecting the finger of the thread puller by means of a spring with the mechanism by which it is operated, so that it shall liberate the thread so soon as it shall have been pulled with sufficient tension, substantially as specified.

I also claim the adjustable bar on the lay, in combination with the levers that operate the sectional take-up, and the bar which gages the extent to which the said levers shall be pulled by the jacquard, substantially as and for the purpose specified.

And I also claim the shuttle carriers for operating the shuttle, or the equivalents thereof, as distinguished from the fly-shuttle system, in combination with the sectional take-up, or the equivalent thereof, substantially as and for the purpose described.

58,590.—APPLICATION OF BEDSTEADS TO APARTMENTS.—Julia P. Brown, Boston, Mass.

I claim an apartment, constructed with bedstead-receiving recess, formed in or at its ceiling, or upper part, and having a bedstead applied to such recess, by counterbalancing devices, substantially as and for the purpose described.

58,591.—DYEING HAT BODIES.—Alfred C. Brush, Norwalk, Conn., and George C. White, Danbury, Conn.

We claim the process of dyeing hat bodies, substantially as hereinbefore set forth, by applying the dye or coloring matter to them after the sizing has been commenced, and before it is completed.

58,592.—MEASURING FAUCET.—H. L. and J. A. Buckwalter, Kimberton, Penn. Antedated Sept. 30, 1866.

First, The arrangement of the regulating screw, M, grooves, N, eccentric, B, and cylinder, A, constructed and operating in the manner and for the purpose herein described.

Second, We also claim the register wheel, with two projecting cogs, m m, and a broad cog, p, to stop the revolution of the spindle of the faucet, and an open space, n, to allow the spindle to revolve freely when a measurement is not required, substantially as shown.

Third, We also claim the arrangement in relation to the foregoing of the follower, G, constructed as described, with the keepers, 3 3 of the cylinder, A, and spindle, J, in the manner and for the purpose herein described.

58,593.—TALLY BOX FOR MEASURING GRAIN.—Andrew J. Burke, Grundy Center, Iowa.

I claim the arrangement of the ratchet wheel, C, operated by the pawl, f, and provided with the index, r, the pinion, O, gearing into the wheel, D, on shaft, e, the latter being provided with the index, t, and pinion, n, operating the index, I, by means of the wheel, B, secured to the tubular shaft, l, all operating as and for the purpose set forth.

58,594.—TELEGRAPH INSULATOR.—W. H. Burnap and J. D. Brassington, New York City.

First, We claim a non-conducting ring or disk, fitted in the base of a hollow shell insulator below the point at which the pin is secured, substantially as and for the purpose herein set forth.

Second, We claim the non-conducting disk, M, m, fitted with springs, P1 P2, and adapted to be confined in the base of the shell, A, substantially in the manner and for the purpose herein set forth.

Third, We claim the within described combination and arrangement of the shell, A H, confining material, J, inverted cup, O, and removable non-conducting disk, M, as and for the purpose herein set forth.

58,595.—ELEVATOR BUCKET.—Charles Camp, Buffalo, N. Y.

I claim, First, The elastic or flexible elevator bucket composed of the materials described, or the equivalent thereof.

Second, In combination therewith, I claim the metallic rim, A, as and for the purpose specified.

58,596.—DOUGH MIXER.—Charles Chavanne, New Orleans, La.

I claim the revolving of the bowl, E, and the arms, a a a a, in the different directions, at the same time, and the scraper, M, as set forth and fully described.

58,597.—DOUBLE SHOVEL PLOW.—John Clarridge, Pancoastburgh, Ohio.

I claim the combination and arrangement of the arms, L and M, the toothed blocks, N and P, and the wedges or keys, O and R, with the beams, B and A, the plow head, G, and the handle, I, substantially as herein described and for the purpose set forth.

58,598.—SINGLE-ROW CORN PLANTER.—John Clarridge, Pancoastburgh, Ohio.

First, I claim the combination and arrangement of the elevator, I, shafts, H and F, pulleys, E and c', band, D, drive wheel, B, and spout, J, with each other, with the hopper, G, and with the frame, A, of the machine, substantially as herein described and for the purpose set forth.

Second, The combination of valve, T, lever X, and slide rod, A', with each other, with the hollow plow shank, K, and with the handle, B', substantially as described and for the purpose set forth.

Third, The combination of the concavo-convex head, k', of the hollow shank, K, with the concave bed plate, a5, substantially as herein described and for the purpose set forth.

58,599.—MACHINE FOR MAKING MOLDING.—Thos. J. Close, Philadelphia, Pa.

I claim, First, The cone-shaped hopper, formed by combining the inner case, J, and outer case, K, with each other, and with the frame, A, of the machine, substantially as herein described and for the purpose set forth.

Second, The combination with the hopper, J K, of the conveyer, W, substantially as described and for the purpose set forth.

Third, The combination of the die wheel, A', constructed substantially as described, with the conveyer, W, and with the frame, A, of the machine, substantially as described and for the purpose set forth.

Fourth, The combination with the conveyer, W, of an adjustable slide or scraper, B', constructed and arranged substantially as described and for the purpose set forth.

Fifth, The combination with the hopper, J K, of the screw, H I, constructed and arranged substantially as described and for the purpose set forth.

Sixth, The combination of the valve, E', arm, F', levers, G' I', and cam, K' L', with each other, with the hopper, J K, and with the frame, A, of the machine, substantially as described and for the purpose set forth.

Seventh, The combination of the rubber or cleaner, P', and scraper, T', with each other, and with the conveyer, W, substantially as described and for the purpose set forth.

Eighth, The combination of the oil cup, D', with the hopper, J K, and with the die wheel, A', substantially as described and for the purpose set forth.

58,600.—FAUCET. — Thomas M. Coffin, Plymouth, Mass.

I claim, as a new article of manufacture, the faucet herein described, consisting of the barrel, A, provided with a valve seat, a', and an eduction nozzle, C, the neck, D, connected to the barrel by a screw joint, a m, to afford access to the valve seat, the stem, E, cast in one piece, with the external head, G, and threaded at g, to fit an internal screw thread in the barrel, A, and the valve, F', mounted removably on the end of the stem, E, all as herein specified and for the purpose explained.

58,601.—MACHINE FOR RAKING AND LOADING HAY. —Munson Cole, Colebrook, Conn., and David Cole, Kent, Conn.

We claim, First, The gathering rake arranged in combination with the rods, r, springs, h, and bar, b', substantially as described.

Second, In combination with the above, the endless elevator and clutch arrangement, all arranged and operating substantially as and for the purposes set forth.

58,602.—ROTARY STEAM ENGINE.—M. H. Collins, Chelsea, Mass.

I claim the combination and arrangement of the chambered drum, F, made substantially as described, with the two pistons and their gates and ports, d d, arranged in the case or cylinder, as specified.

I also claim the arrangement and combination of the springs, q r, with each of the yokes, p, the same being as and for the purpose specified.

I also claim the construction of each piston, and that part of the case against which it operates, viz: curved on their peripheries, substantially as represented, in combination with the cylindrical drum, arranged with respect to them, as specified.

58,603.—PADDLE WHEEL.—Michael H. Collins and William H. Holland, Chelsea, Mass.

We claim the arrangement and combination of its obtuse angular plates or paddles, r r, with the three series of end and middle connections, n p n, and the three wheels composed of the rings, i k l, and the three series of spokes applied together and to a hub, as described.

We also claim the combination and arrangement of the external rings, m m, with the paddles, r r, the three series of connections, n p n, and the three wheels composed of the three rings, i k l, and the three series of spokes, applied together and to a hub, as described.

58,604.—STEAM GENERATOR. — William Conant, Geneva, Ill.

I claim, First, The generating conductor, A, and superheating receiver, C, the latter arranged within a contracted flue, through which the products of combustion pass in close contact with its surface, substantially as and for the purposes described.

Second, In combination with the generating pipe and receiver, arranged as described, I further claim the lining, D, employed to confine the products of combustion around the receiver, and prevent the radiation of heat.

58,605.—LATHE FOR TURNING SHAFTING.—J. J. Conley, New York City.

I claim, First, The annular block, A*, so applied in combination with the tubular spindle, B, and cutter head, C, as to support and steady the shaft during the operation of turning the same, substantially as herein set forth.

Second, The attachment of the smoothing cutter, u, to the annular block, A*, substantially as herein set forth for the purposes specified.

Third, The annular block, B*, fitted into the rearmost end of the tubular spindle, B, and operating in conjunction with the annular block, A*, to steady and support the shaft while being turned, substantially as herein set forth.

Fourth, The combination of the hollow spindle, B, cutter head, C, and the two sets of grooved feed rollers, D and E, one set for pushing and the other for drawing the shaft during the operation of turning the same; the whole arranged and operating substantially as herein set forth for the purpose specified.

Fifth, The swinging or self-adjusting shafts, C', furnished with tangent screws, P, and arranged in relation with the worm wheels, t, and grooved feeding rolls, substantially as herein set forth for the purpose specified.

58,606.—GAS BURNER.—John B. Cooledge, Boston, Mass.

I claim the split tip, c, in combination with the exterior tube, b, operating substantially as described.

58,607.—EVAPORATOR.—J. Cooper, Mount Vernon, Ohio.

I claim the ears, c, in combination with the guide strips, b, gate

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openings, d, and partitions, D, constructed and operating substantially as and for the purpose described.

58,608.—SODA FOUNTAIN.—William Coughlan, Baltimore, Md.

I claim the valve, I, and opening, J, in the stud, C, at the side of the fountain, at or near the desired level, to act as a gage, and also as a blow-off opening for the discharge of air from the fountain, substantially as described.

I also claim the auxiliary tube, H, attachable or detachable from the faucet, to permit the fountain to be used in the upright or inverted position, substantially as described.

58,609.—LOOM.—Henry Dale, Philadelphia, Pa.

First, I claim the within-described arrangement with respect to the frame, A, and the jacks of the shaft, I, for the reception and removal of the cylinder, J, or its equivalent.

Second, The combination and arrangement on the loom of the cam shaft, c, wheels, x and m, and shaft, I, as specified.

Third, The combination and arrangement of the graduated pulleys, a a, the jacks, G, and the heddle cords, as set forth.

58,610.—KNITTING MACHINE.—J. Dalton, Williamsburgh, N. Y.

First, I claim the method herein described of forming a combined warp and knit stitch by the action of the series of needles which rise and fall in the needle cylinder, in combination with a revolving cam and spool carrier, substantially as described for the purpose specified.

Second, The detached levers, G, with their curvatures, e, in combination with the movable ring, I, substantially as described for the purpose specified.

Third, The reciprocating needles, n, arranged in a circular series, one portion thereof placed within and concentric to that in which the others are placed, or with those with each series at an inclination from a vertical line, substantially as described for the purpose specified.

Fourth, The segmental projections, e, on the upper edges of the levers, G, in combination with the top plate or ring, I, and fulcrum, a, constructed and operating substantially as and for the purpose set forth.

Fifth, The adjustable segments, f, in combination with the cylinder, H, levers, G, and cam, D, constructed and operating substantially as and for the purpose described.

58,611.—WARP DRESSING FRAME.—Alexander M. Damon, Lowell, Mass.

I claim the combination of the slotted bar, P, constructed as described, with the raddles, O, and the actuating gearing, G W, when operating as and for the purpose described.

58,612.—GANG PLOW.—F. S. Davenport, Jerseyville, Ill.

First, I claim the lever, P, rod, Q, and brake, R, arranged and operating as and for the purpose described.

Second, The hinged board, G, in connection with the reversible axles, substantially as and for the purpose described.

Third, The lever, O, and quadrant, N, for regulating the depth of the furrow, substantially as and for the purpose specified.

Fourth, Lifting the hind part of the machine by means of the lever or arm, I, in connection with the chain, J, wheel, K, and lever, L, these parts operating together substantially as and for the purpose described.

Fifth, Hinging the footboard, M, to the plow frame as described.

Sixth, Securing the tongue or draft pole to the footboard, M, in the manner and for the purpose described.

Seventh, The sliding plow standard, B', guide block, O*, lever, A*, and notched seat standard, C, when used together, and in connection with the other parts.

Eighth, Connecting the lever, L, with the tongue or draft pole, by fastening it to the footboard, the whole operating together substantially as and for the purpose set forth.

58,613.—COMBINED ROLLER AND HARROW.—Jas. Davis, Loami, Ill.

First, I claim the revolving harrow, L, in combination with the pinion, K, gear wheel, J and H, and traction wheel, B, for the purposes and substantially as described.

Second, I claim the levers, O O, in combination with the harrow, L, gear wheels, K J and H, substantially as set forth.

Third, I claim the roller, E, in combination with the pendants, F F, frames, A and L, all for the purposes and substantially as described.

58,614.—NEEDLE-FEED OF SEWING MACHINE.—Job A. Davis, Great Bend, Pa.

I claim, First, In sewing machines using a needle-feed the application and use, in combination with the needle-bar and needle, of the needle assistant or helper bar, G, for keeping the cloth smooth and preventing its gathering or bunching as the feed takes place, such bar being placed before the needle, and so arranged as to move up and down upon its fulcrum, and operating substantially as and for the purposes set forth.

Second, The combination of such helper bar with the pressure bar, so arranged in respect to each other that as one descends the other rises, and vice versa, and operating substantially as and for the purpose set forth.

Third, The arrangement of the slot, m, in the helper bar, and the pin, f, upon the pressure bar, or their equivalent, so that the descent of the needle bar or its equivalent will force down the helper bar and elevate the pressure bar, substantially as and for the purposes set forth.

Fourth, Operating the helper and pressure bars substantially as described, from or by means of the needle-bar, or its equivalent, substantially as and for the purposes set forth.

58,615.—ARTIFICIAL CAOUTCHOUC.—Austin G. Day, New York City. Antedated Sept. 29, 1866.

I claim mixing, heating, and sulphurizing vegetable and mineral oils, in combination with gum, resins, and resinous compounds, to form a composition to be used as a substitute for caoutchouc or india-rubber, substantially in the manner and for the purpose herein set forth.

58,616.—HAND WOOD SAW.—Charles M. Day, Ann Arbor, Mich.

I claim the combination of the rock shaft, K, provided with the springs, O, with the bifurcated lever, I, and pitman, J, connected to the saws, P, when arranged to operate as shown and described.

58,617.—HARVESTER.—Joseph Dick, Jr., Canton, Ohio.

First, I claim the sliding raker shaft, E, or its equivalent, and the joint ball, g, in combination with the driving pulley, B, or other suitable case, when the latter has a cylindrical axis within the hanger, A, entirely independent of the said joint ball, g, as shown and described.

Second, The arrangement, in combination with the sliding raker shaft, of the ball, g, and the pulley, B, or other suitable case within the hanger, A, the latter constituting cylindrical bearings for the axis of the said case or pulley, B, as set forth.

Third, The arrangement of the segments, G and G', upon the vertical sleeve, f, and the segmental pinions, C and C', upon the horizontal driving shaft, E', of the raker, as shown, so as to constitute collectively an entire circle of gearing, as shown and described.

Fourth, The combination of the detachable pulley, T, with the sleeve or ferrule, S, having one or more locking pins, c, substantially as and for the purpose set forth.

Fifth, The arrangement of the elevating lever, L, ratchet, O', head, Q, chain, U, and pulley, V, in combination with each other and the brace of the shoe, as and for the purpose set forth.

58,618.—SHINGLE MACHINE.—John B. Dougherty, Rochester, N. Y.

First, I claim the construction and relative arrangements of the saw guard, R and U, in the manner shown and described, to facilitate the removal or re-adjustment of the saw in the machine and for conducting the sawdust from the machine, substantially as set forth.

Second, The arrangement of the counterbalance, w, shaft, l, pinions, k, rocks, y, and clamping bar, g, in combination with the cams, m and n, substantially in the manner and for the purposes set forth.

Third, The arrangement of the screw gears and crank, G, with the slotted arm, H, attached to the axial shaft, C, of the bolt or clamping frame, B, substantially as and for the purposes shown and described.

Fourth, Providing the saw, S, in the within-described machine, with a collar, j, having a conical bore to fit the mandrel, as and for the purposes set forth.

Fifth, The arrangement of the pivoted or swinging circular track, W, as and for the purposes set forth.

58,619.—BUCKLE AND RING.—Ralph C. Dunham, New Britain, Conn.

I claim a buckle or ring composed of a metal core, a, and a covering, b, of india-rubber or other vulcanizable gum, substantially as and for the purpose described.

58,620.—HORSE COLLAR.—C. R. Durfee, Rochester, N. Y.

I claim the horse collar herein described, consisting of the curved draft bow or bar, B, plates, P, pads, A, and connecting strap or pad, F, the several parts being constructed, arranged, and operating substantially in the manner herein shown and for the purpose set forth.

58,621.—RAILWAY.—Zebina Eastman, Chicago, Ill.

First, I claim the axles, e e, each constructed in one piece, in combination with the tables or bed pieces, d d, connecting rod or reach, h, and transverse reach, i, the whole being constructed, arranged, and operated substantially in the manner and for the purpose set forth.

Second, I claim the axles, e e y, in combination with the reach, b, toothed frames, r s s, and transverse reaches, i i, the whole being constructed and operated substantially in the manner and for the purpose set forth.

58,622.—SEWING SWEAT LININGS INTO HATS.—Rudolph Eickemeyer, Yonkers, N. Y.

I claim the sewing in of the sweat lining of a hat by stitches passing once through the lining and through the hat body diagonally to the brim and sides, without being whipped over the edge of the lining, substantially as herein specified.

58,623.—INDIA-RUBBER AND LEATHER SOLE.—Lewis Elliott, Jr., New Haven, Conn.

I claim a waterproof sole for boots and shoes, formed of two thicknesses, one of india-rubber or its compounds, the other of leather, the two being united firmly in the manner specified.

58,624.—BEEHIVE.—Elva E. Ellis, Friendsville, Ill.

I claim the pivoted slats, C, at the bottom of the case, A, the hive in connection with the bottom, B, provided with an opening covered with wire cloth, a, and the openings, e', in the sides of the partition, D, substantially as and for the purpose set forth.

58,625.—STEAM-ENGINE GLOBE VALVE.—Theodore R. Fancher, Norwalk, Conn.

I claim the arrangement of the adjustable rubber ring, C, and screw ring, E, substantially as and for the purpose described.

58,626.—SPIKE PULLER.—R. A. Fish, Worcester, Mass.

I claim the combination of lever, A, with its bill hook end, a, with the base piece, B, having a bill hook projection, d, and flattened rear part, D, constructed and arranged for joint operation, as set forth.

58,627.—STRETCHER FOR CANVAS.—Jared B. Flagg, New Haven, Conn., and George Storer, New Britain, Conn.

We claim the perforated wedge, b, in combination with the groove, d, pins or screws, e, and frame, substantially as and for the purpose described.

We also claim, in combination with the above, the metal or wood pieces, c, substantially as and for the purposes described.

58,628.—CHURN.—John W. Forsyth, Leesburg, Va., assignor to himself, John W. Head, and Nelson Head.

I claim the combination of the platform, F, with the posts, E' E', their connecting cross piece, G, wheel, A, pinion, B, fly wheel, I, pin, N, shaft, C and O, the vessel, M, the hook, a a, securing the lid, L, the slotted strips, D D D, the hooks, t t t, the staples, h h h, as is described and for the purpose set forth.

58,629.—SADIRON HEATER.—Charles H. Frost, Peekskill, N. Y.

I claim bending up or flaring the front ends of the covers of sadiron heaters, so as to allow the nose or point of a sadiron to be inserted beneath said covers to raise them, substantially as set forth.

58,630.—WINNOWING MACHINE.—Francis Frye, Time, Ill.

First, I claim the eccentric, E, lever, D, in combination with the hopper, B, and screen, C, substantially and for the purposes set forth.

Second, I claim the lever, D, eccentric, B, in combination with the fans, G, for the purposes and substantially as herein shown and described.

58,631.—DENTAL DRILL.—William H. Gates, Louisville, Ky.

I claim a drill head having two or more of the longitudinally curved external surfaces, C, extending from B to H, in conjunction with an equal number of cutting edges, undercut by deep grooves running backward from the end spirally and diagonally to the stem or axis, substantially as described and for the purpose set forth.

58,632.—NUTMEG GRATER.—C. L. Gilpatric, South Dedham, Mass.

I claim the case, A, as constructed in combination with the spool, B, secured in said case, and provided with the perforated covering, D, in which is cut an opening, a, which discharges the ground nutmeg, which passes into the spool, and by means of which the spool may be cleaned internally, the several parts being arranged as and for the purpose herein specified.

58,633.—WRENCH.—Willis D. Gold, Philadelphia, Pa.

I claim the arrangement of the spring toothed lever, F, in combination with the movable jaw, E, operating with the rectangular shank, C, in the manner and for the purpose herein described.

58,634.—RAILWAY TRACK CLEARER.—M. J. Goodwin, Boston, Mass.

I claim combining with the car truck and brakes of a railway car, the clearers hung from the brakes in front of the car truck, and at a short distance above the surface of the track rails, substantially as described.

58,635.—HORSE HAY FORK.—Alexander Gordon, Rochester, N. Y.

I claim in combination with the point, P, the toothed adjusting bar, v, the hand lever, E, and the locking latch, D, they all operating conjointly in the manner and for the purposes specified.

58,636.—SHOVEL.—Samuel J. Goucher, Philadelphia, Pa.

I claim strips, E, secured to the blade and handle strap of a shovel, as and for the purpose set forth.

58,637.—NAIL MACHINE.—Simeon L. Gould, Skowhegan, Me.

I claim the arrangement of the slide plate, k, and the eccentric, h, with the vibratory cutter, carrying levers, and the cutter wheel and its shaft, or the same and the feed rollers and guide bar, as set forth.

I also claim the arrangement of the rotary cutters, their sockets, clamping and adjusting screws, and the wheel or cutter bed, as specified.

58,638.—COOKING STOVE.—Daniel Graves, Seneca, Ill.

First, I claim the combination and relative arrangement of the frustum plates, B C F and H, substantially as herein shown and described, in the formation of cooking stoves, for the purposes set forth.

Second, The broad annular hearth, G, when arranged to be heated by the caloric current passing under it, substantially as and for the purposes shown and described.

Third, The double frustum, B C, which constitutes the inner draft flue, and gives a radiating direction to the caloric current, as shown.

Fourth, The segmental reflector plates or cases, R, in combination with the frustum stove, constituting an annular heating or baking oven, as shown and described.

58,639.—MINER'S FUSE LOCK.—Gebhard Hagenmeyer, Big River, Cal.

I claim, as an improved fuse lock, the arrangement of the hammer, c, sere or dog, g, spring, e, pin, j, and barrel, b, relating to each other and operating in the manner as and for the purpose herein specified.

The pin, j, in combination with the spring, e, when used for the purpose herein represented and described.

58,640.—AXLE BOX COVER.—F. K. Hain, Renova, Pa.

I claim the cover, B, trunnions, a b, spring, f, eyes, d e, with inner inclined planes, the eye, d, being open and provided with notch, g, and the box, A, combined and arranged substantially as described for the purpose specified.

58,641.—PAPER SKIRT FOR LADIES.—J. Henry Hayward, New York City.

First, I claim, as a new and useful article of manufacture, the paper skirt as herein described, made by the combination of one or more sections of sheet paper, of any and every kind, quality and color, water-proof and fire-proof inclusive, arranged adhesively together, and strengthened by means of cords, tops, or other suitable material and devices, as fully described.

I claim the peculiar manner of arranging and connecting the said skirt at the waist by the means and for the purposes specified.

I claim the joining of two or more skirts made, as above described, on the same band, bodice or waist hoops, as above set forth.

58,642.—WASHING MACHINE.—George M. Heine, Brownsville, Ind.

I claim the combination of the supporting frame, A B, rod, C, flywheel, E, crank, H, connecting rod, I, arm, J, and barrel, D, all constructed and arranged to operate substantially as and for the purposes described.

58,643.—PROCESS FOR TANNING.—George W. Hersey, Greenbush, Wis.

First, I claim soaking the hides or skins in salt water mixed with soft soap previous to liming, substantially as and for the purpose described.

Second, The use for tanning leather of a liquor containing glauber salt and common salt in combination with terra japonica, substantially as and for the purpose described.

Third, Also applying to the flesh the sulphuric acid, glauber salts, and alum and borax, to all furs, with swab, or brush, or paste to the same.

58,644.—MANUFACTURE OF CREAM CRACKERS.—Daniel M. Holmes, Brooklyn, N. Y.

I claim a cracker composed of the ingredients in the properties named, and treated in the manner substantially as set forth.

58,645.—PUNCH FOR HORSE SHOES.—Charles Huie, Lockport, N. Y.

I claim a punch, the point, e, of which is provided with the flange, f, serving both as a guard and gage, when constructed and operating substantially in the manner and for the purpose set forth.

58,646.—ROCKET.—E. S. Hunt, Weymouth, Mass.

I claim the arrangement of the spring, m, and its case, m', with the rocket charge tube, A, and its priming vent, h.

58,647.—HUB.—Allen Huston, Cincinnati, Ohio.

I claim casting a hub in two concentric parts, one about or within the other, so that while the parts are inseparable each may revolve freely in relation to the other, substantially as described.

58,648.—CONSTRUCTION OF OIL TANK.—Thaddeus C. Joy, Titusville, Pa.

I claim the method, substantially as described, of constructing metal tanks for the purpose of rendering them portable.

58,649.—FEED CUTTER AND BOX.—Abraham B. King, Camden, Ohio.

First, I claim the arrangement of box or manger A a a', shiftable cutting apparatus, E, and hinging and supporting devices, C C', D D', F F', G, substantially as set forth.

Second, The bar, H, pivoted to the top of the trough, for the purpose set forth.

Third, The combination of knife, I, adjustable wedge, J, screw, K, and stump, L, for the purpose explained.

58,650.—DRIVING PIPE FOR OIL WELLS.—Geo. L. King, Philadelphia, Pa.

First, I claim the combination of the inner pipe, B, strengthening bands, D, and thimbles, C, the several parts being constructed and arranged in relation to each other, substantially in the manner hereinbefore described and for the purpose specified.

Second, The combination of the shoe or cutter, A, with the lower end of the pipe, B, and lower strengthening band, D, substantially in the manner described and for the purpose above set forth.

58,651.—HOOP FOR SKIRT.—Judah Levy, Philadelphia, Pa.

I claim a skirt, each hoop of which consists of two light wires, rigidly clasped together at intervals, as and for the purpose set forth.

58,652.—MEDICINE.—N. C. Lincoln, Brunswick, Maine.

I claim the compound of ingredients for a catarrh medicine, mixed in the manner and proportions above described.

58,653.—CARPET STRETCHER.—Carl A. Lindner, Cincinnati, Ohio.

I claim herein, as new and of my invention, the carpet stretcher composed of the handspike, A, grapnel, B, substantially as set forth.

58,654.—APPARATUS FOR MAKING BUTTON HOLES.—Ferdinand Lindner, Dayton, Ohio.

I claim a button-hole regulator, made of steel or any other suitable material, having the jaws, A B, bow spring, H, levers, D D, and handles, G G, as herein described and for the purposes set forth.

58,655.—SASH SUPPORTER AND FASTENER.—J. W. and S. A. Livingston, Hartford, Conn.

We claim the friction roller, D, and spring, f, when combined and arranged substantially as and for the purpose specified.

In combination with the foregoing, the use of a pin, K, or its equivalent, as and for the purpose described.

58,656.—BLASTING CARTRIDGE.—Herman S. Lucas, Chester, Mass.

First, I claim a cartridge for blasting, made of solidly compressed gunpowder, containing either nitrate of potash or nitrate of soda, or granulated, or of any other suitable explosive material capable of being safely compressed into a suitable form for blasting purposes, and provided with any suitable device for igniting the same from the interior.

Second, The combination of a cylindrical cartridge of solidly compressed gunpowder or other explosive materials for blasting, with a central perforation extending partly or wholly through the same, constructed in the manner and for the purpose above described.

Third, The combination of a cartridge of solidly compressed gunpowder or other explosive materials for blasting with a fuse, when said fuse is inserted into its interior, in the manner and for the purpose set forth.

Fourth, The combination of a cartridge of solidly compressed gunpowder for blasting purposes with an envelope of paper or other textile material made impermeable to water, or with envelopes or casings of sheet metal, earthenware or wood, the same being attached to the fuse in the manner and for the purpose set forth.

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58,657.—METALLIC FASTENING FOR BUCKLES AND STRAPS.—H. H. Mansfield, South Canton, Mass.

First, I claim the metallic plate or bushing, A, constructed substantially as and for the purpose herein set forth and described.

Second, The manner of attaching the strap, C, to the buckle, B, substantially as herein set forth and described.

58,658.—HOLLOW AUGERS.—Jacob McClure, Rockland, Maine.

I claim adjusting the cutters to different sizes of tenons, by means of inclined cutter bearing pieces, sliding upon inclined supporting pieces and made adjustable thereon, and used in combination with a receding center, arranged to operate substantially as described.

58,659.—PRUNING KNIFE.—Cole McCrea, Leavenworth, Kansas.

First, I claim the combination with a pruning hook of a revolving wheel, A, substantially as and for the purpose described.

Second, I claim the combination with a pruning hook of an extension handle, B, substantially as specified.

58,660.—COMPOSITION FOR REMOVING INCRUSTATION FROM STEAM BOILERS.—Charles McKee, San Francisco, Cal.

I claim the combination of camphor, potash, ammonia and alum with petroleum or other oleaginous matter, substantially as described and for the uses and purposes hereinbefore set forth.

58,661.—SUBMARINE TORPEDO BOAT.—Scovil S. Merriam, Springfield, Mass.

First, I claim the construction of the lower portion or bottom of a submarine vessel of heavy cast iron bed plates containing the water tanks, in combination with the ends of the vessel, and arranged substantially as and for the purpose herein set forth.

Second, The arrangement of the rope or cable, guide pulley and windlass with gearing, for the purpose of operating the suspended ballast in a perfectly air-tight box, operating and being operated substantially in the manner and for the purpose described.

Third, I claim, in combination with a submarine vessel, the arrangement of a torpedo bar near the bow, at the bottom of the vessel, and the manner of operating said bar from the inside of the vessel, in the manner substantially as described.

Fourth, I claim the arrangement of a chamber. X, capable of being closed perfectly air-tight, and surrounding one or more of the doors in the bottom of the vessel, for the purpose substantially as specified.

Fifth, I claim the construction of a submarine vessel, consisting of a heavy cast iron bottom plate with an iron or copper hull, in combination with the water tanks arranged in the bed plates, the air chambers around the side, top and ends of the working compartment, the suspended ballast weight, the screw propeller worked either by hand or by a compressed air engine, and the torpedo bar with exploding shell at its end, when the whole is arranged and combined in the manner and for the purpose substantially as set forth and described.

58,662.—FIRE AND BURGLAR ALARM.—Edward Middleton, Cleveland, Ohio.

I claim the spiral springs, Q, yoke, R, cross piece, X, arm, Y, levers, S, and cords, Y', as arranged, and in combination with the spring, E, wheels, F K K', hammer, o, and bell, P, arranged in the manner and for the purpose set forth.

58,663.—ATTACHING THILL OR TONGUE TO VEHICLES.—Jonathan S. Miller, Everton, Ind.

I claim the combination of a clip formed in two parts, C and C', brace, G, and bolt, E, when said several parts are respectively constructed and arranged for use substantially as set forth.

58,664.—SAW.—Warren P. Miller, San Francisco, Cal.

I claim an insertable tooth for saws, when said tooth is constructed upon lines having a true circle and comprising more than one hundred and eighty degrees of the circle, and inserted into a cavity in the saw plate of a shape to fit said tooth, substantially as described.

58,665.—MANUFACTURE OF SPOONS.—G. I. Mix, Wallingford, Conn.

I claim the spoon blank cast and subsequently rolled, as described, as an article of manufacture.

58,666.—ANNEALING FURNACE.—Hiram W. Moore, Bridgeport, Conn.

I claim the openings, a a, at the base of the annealing case, in combination with the annular flue, F, and perforated plate, J, for admitting atmospheric air to promote the combustion of the carbon in contact with the wheels, substantially as described.

I also claim, in combination with the case, A, the opening, b, the horizontal air flue, G, and the vertical flue space, H', for conveying air to and cooling the hubs of the wheels, substantially as described.

I also claim, in combination with the annealing furnace for containing a pile or series of wheels, the series of perforated and flanged rings to be placed between said wheels for regulating and controlling the combustion of the charcoal therein, as and for the purpose described.

58,667.—PAPER FASTENER.—George G. W. Morgan, Washington, D. C.

I claim a paper or other fastener formed out of a rhomboidal blank and bent into a bow or staple form, and capable of piercing and cutting its way into or through the paper or other material, and of being bent down or clinched by the thumb and finger or hand of the user, and overlap each other as shown at the line, b, figs. 2 and 5, without the use of any special instrument for inserting and clinching it, all as herein described and represented.

58,668.—WINDOW CURTAIN.—William Henry Morrison, Indianapolis, Ind.

I claim the combination of the roller, E, and the double curtain, F F, having the apertures, x x x, in the opposite parts, substantially as described, when the combination is used for the purposes specified.

58,669.—CLOTHES WRINGER.—Hiram Nash, Cincinnati, Ohio.

I claim the combination of the inclosing case, D, made up of the plate, f, and cover, h, and provided with the concentric bearing, K K, with the set of gearing, 1, 2, 3, 4, arranged as described, the whole used in connection with the rollers, B B, substantially in the manner and for the purpose specified.

I also claim the tightening buttons or wedges, p p, in combination with the clamps, G G, and standards, A A, arranged and operating as set forth.

58,670.—HEMMING GUIDE FOR SEWING MACHINES.—S. D. Ogburn, Springfield, Tenn.

First, I claim the plate, B, arranged, as shown, with several curved slits as measures of quantity for different widths of hem.

Second, I claim, in combination with the above, the removable pin, E, in the plate, D, as and for the purpose described.

58,671.—EVAPORATOR.—Samuel Page, McAllisterville, Pa.

I claim the arrangement of the pans, A E G, with the connecting pipe, C, strainer, B, and the furnace flues, substantially as described and represented.

58,672.—WELL BORER.—John T. Parker, Farmington, Maine.

I claim the combination of the slotted part, B, part, A, stop pin, e, and hinge, c, operating substantially as described for the purpose specified.

58,673.—PAPER COLLAR AND BOSOM.—Moritz Pinner, New York City.

First, I claim a substitute for a shirt collar and a shirt bosom, such substitute being made in whole or in part of paper cut in one or more pieces, and made to fit or adjust itself around the neck and over the collar bone and chest of the wearer, substantially by the means and in the manner herein set forth and described.

Second, Combining the collar part, A, with the bosom part, B, of the above invention by means of one or more strips, g, for the purpose of strengthening, connecting or holding in place such parts, A and B, or either of them, all substantially as herein set forth and described.

Third, Bending, creasing or indenting on line, d, the product embraced in the above invention, for the purpose herein set forth and described.

Fourth, Making the above described article open and adjustable on any side or part of the neck of the wearer.

Fifth, Printing on and embossing the above described article, or the material of which it is made, in whole or in part, all substantially as herein set forth and for the purposes specified.

58,674.—FRUIT JAR.—George A. Reynolds, Rochester, N. Y.

I claim the arrangement of the clamping bar, B, having the inclined planes or hooks, c, formed upon its ends, and provided in the center with a fixed elastic packing, t, for the vent formed in the apex of the cover in this class of self-sealing cans or jars, as and for the purpose shown and described.

58,675.—HEEL IRON.—W. M. Rice, Boston, Mass.

I claim, as a new article of manufacture, the above described heel irons, to wit: heel irons made thickest on that part or side which usually wears out fastest and beveled on the inside, as described, so as to be held on to the heel by the leather nailed or pegged in the inside of said irons.

58,676.—MACHINE FOR PUNCHING SHEETS OF METAL.—J. M. Riter and L. J. Farquhar, Pittsburgh, Pa.

First, We claim the combination of the adjustable diagonal rack, E, with the rack table, D, and its ratchet, h, for the purpose of regulating and varying at pleasure the length of each separate movement of the rack table.

Second, The combination of the rack table, D, and the turning frame, K, attached thereto by a rivet for the purpose of producing a curvilinear movement.

Third, The combination of the rack table, D, and frame, K, pivoted thereto with the adjustable angle plate, L, and rollers, g' g'', or other similarly arranged bearing surfaces, constructed substantially as and for the purposes hereinbefore set forth.

Fourth, Also, in combination with the devices specified in the third claim, the slide, q, with screw, J, and spiral springs, u, constructed and arranged substantially as hereinbefore described for the purpose of pressing the frame, K, against the rollers.

58,677.—CAR SPRING.—Archibald H. Rowand, Allegheny, Pa.

I claim an elliptic spring, composed of a single strip of steel, formed in the shape substantially as shown, so that it will retain its form without the use of clamps.

58,678.—STEAM GENERATOR.—Esau Rowing, Parkersburg, W. Va. Antedated September 23, 1866.

I claim so arranging a series of inclined tubes, a, with reference to the drum, f, that the water line intersecting the drum at its center shall leave a gradually increasing steam space in the tubes, a, from the lower or furnace end of said tubes to the point of their junction with the drum, substantially as and for the purposes set forth.

58,679.—BED BOTTOM.—Rufus S. Sanborn, Ripon, Wis.

I claim a bed bottom formed by interweaving with the ordinary slats, cords or bands of india rubber or other suitable elastic material, substantially in the manner described and shown.

58,680.—OBSERVATORY.—L. B. Sawyer, Charlestown, Mass.

First, I claim the employment, in combination with a tower, of a car of an annular form working upon guides upon the exterior of the tower and a hoisting apparatus for raising and lowering the car, substantially as described.

Second, The employment, in combination with the tower, of the projecting arms of the frame, D, to which the guys are attached, by which the car is permitted to rise to the top of the tower without coming in contact with them, substantially as described.

Third, I claim the annular counterpoise working within the tower in combination with the annular car working upon the exterior of the tower, substantially as described.

58,681.—MACHINE FOR SPLITTING AND SKIVING LEATHER.—Samuel H. Schenck, Zionsville, Ind.

First, I claim the checks, 7 7, the adjustable skiving block, 1, the knife, 2, and its attachment to the lever, 3,

Second, The roller, 5, in connection with the skiving fences and the set screw, 6, all arranged and operating substantially as set forth and described.

58,682.—CHAIR.—Charles C. Schmitt, New York City.

I claim a chair frame susceptible of being adjusted to any inclination desired, from a horizontal to a vertical plane, or nearly so, in combination with a seat and back composed of a continuous strip of cloth so hung to the chair frame that it can be lengthened or shortened, in the manner herein specified and for the purpose set forth.

58,683.—FLY FAN.—J. G. Schwemmer and S. Mueller, Philadelphia, Pa.

We claim the flaps, A A, when operated by the described cam movement through a sliding rod, E, bell cranks, B B', and links, c c, and when arranged for the purpose of giving access to the articles thereby protected from insects, substantially as set forth.

58,684.—ERASER AND BURNISHER.—A. G. Shaver, New Haven, Conn.

I claim, in combination with the blade or handle of an eraser or desk knife, a burnisher tip, substantially as described.

58,685.—STEAM GENERATOR.—Simeon Sherman, Weston, Mo.

First, I claim the central chamber, F, and outer chamber connected by the vertical pipes, I, which operate as described, in combination with the tubes, K, and mud valves, L, for the removal of sediment.

Second, The revolving arrangement of perforated troughs for dripping the water upon the heated surface, as described.

Third, The plates, R, attached to the heated surface for the retention of the water, as and for the purpose described.

58,686.—MANUFACTURE OF CIGARETTES.—Samuel Shuck, Bedford, Pa.

First, I claim the method herein described of filling a wrapper with fine-cut tobacco by means of a tube and piston, the wrapper being drawn over the tube and receiving the core as the same is pushed out of the tube by the piston, substantially as shown and described.

Second, The method herein described of forming the wrapper preparatory to filling, by means of the forming plate, Fig. 2, and the hinged plate, Fig. 3, substantially as described.

Third, I also claim the within-described method of filling and packing the wrapper by inserting the fine-cut tobacco through a tube inclosed in the wrapper, and moving the said tube up and down in the wrapper during the process of filling, as described.

58,687.—PAPER HOLDER.—D. M. Smith, Springfield, Vt.

I claim the construction and arrangement of the coil spring provided with a point, B, that pierces the eye or hole, C, and all from one piece of wire, substantially as and for the purposes described.

58,688.—LOCK.—Amos W. Snow, Norwich, Conn.

I claim the arrangement of the latch bolt, C, with its arm, f, the spring tumblers, b b, as described, and guard plate, l, constructed and operating in combination with a suitable handle and key, in the manner herein specified.

58,689.—HORSE RAKE.—Jacob A. Spear, Braintree, Vt.

I claim the arrangement upon the carriage, A B C, of the boards, E J, and bars, I I1 I2, as and for the purpose herein described and represented.

I further claim, in combination with the above, the hinged rock shaft, F, levers, G G, connecting bars, G' and P, reaches, M, bars, Q, and the sectional jointed rake, o o' R R S, when constructed and arranged in the manner and for the purpose specified.

58,690.—HAIR RESTORATIVE.—John Sprink, Council Bluffs, Iowa.

I claim the proportionate quantities of the ingredients as compounded and made for a vegetable hair tonic, substantially in the manner and for the purpose as herein specified.

58,691.—DOUGH MIXER.—John M. Stanyau, Milford, N. H.

I claim the improved dough mixer, made substantially as described, viz.; of the pan and cover with the handle socket and the journal applied and arranged in manner as specified, such cover and pan being provided with suitable connections, as set forth.

58,692.—VISE FOR HOLDING SAWS.—G. N. Stearns, Syracuse, N. Y.

I claim the herein-described vise as a new article of manufacture, for the purposes set forth.

58,693.—CORN CULTIVATOR.—L. O. Stevens, Pekin, Ill.

I claim the frame, D, arms, N N, and beams, A A, combined and operating substantially as described for the purpose specified.

I further claim the curved or arched bars, M M, in connection with the frames, K K, for supporting the shaft, L, substantially as and for the purpose specified.

58,694.—CLAMP FOR WRINGING MACHINES.—James Stimpson, Baldwinsville, Mass.

First, I claim the adjustable rods, H, attached to or cast with horizontal bars, G which are fitted loosely on the pendent bars, a, of the end pieces, A, and provided with screws, I, to bear against the edges of sector projections, J, for the purpose described.

Second, The springs, K, in combination with the adjustable rods, H, set screws, I, and pendent bars, a, arranged as and for the purpose set forth.

58,695.—SHEEP SHEARS.—James A. Strong, North Wolcott, Vt. Antedated Sept. 30, 1866.

First, I claim the flanges, A' B', in combination with the blades, A B, and spring, C, as and for the purposes herein specified.

Second, The swelled or turned-up front, A*, arranged relatively to the flange, A', blades, A B, and spring, C, substantially as and for the purpose specified.

58,696.—BEEHIVE.—Samuel Taylor, Burlington, Maine.

I claim a beehive constructed of a series of sections, A A' A'', in combination with sliding frames, E, applied or fitted to the sections, and constructed substantially in the manner shown and described for the purpose set forth.

58,697.—BEEHIVE.—Henry A. Tozier, Littleton, Me.

I claim the removable plate or board, D', placed within the body, A, of the hive, substantially in the manner as and for the purpose herein set forth.

58,698.—COTTON TIE.—Charles W. Wailey, New Orleans, La.

I claim the metallic tie or buckle, A, when constructed as described for the purpose set forth.

58,699.—BALANCE SLIDE VALVE.—John W. Wait, Portsmouth, Ohio.

I claim the valve block, A, and steam channels, C C', of the two balanced slide valves, D D, constructed, arranged, and operated substantially as and for the object specified.

58,700.—MACHINE FOR PRESSING BRICKS.—William H. Walrath, Chittenango, N. Y.

First, I claim the arrangement of a stationary table, H, upon the upper surface of the revolving mold table, C, in combination with revolving blades, g, which are so arranged as to sweep the bricks from the followers, F, upon said stationary table, substantially as described.

Second, In combination with the pug mill, B, and revolving mold table, C, I claim the upward moving followers, F', and a plate, G, which is sustained by means of the brackets, J J, bolted upon the frame, A, so that the resistance to the upward pressure of the followers will be sustained by said plate brackets and frame, substantially as described.

Third, Providing for adjusting the elevated portion of the track, E, at the point where the made bricks are discharged from the mold, by means substantially as described.

Fourth, Communicating motion to the mold table directly from a horizontal driving shaft, L, in combination with the shaft, C', and spur wheels, b1 b3, so that the stirring shaft of the pug mill, as well as the mold table shall receive motion from said main shaft, substantially as described.

Fifth, Communicating motion to the revolving blades, from the shaft, L, which moves the mold table, C, substantially as described.

Sixth, In combination with a revolving mold table, C, I claim the device which will discharge the bricks from the follower plates upon a stationary table, H, or its equivalent, substantially as described.

58,701.—PLASTERING MOLD FOR CORNICES.—C. P Walter, Aston Township, Pa.

First, I claim the combination of the former, B, with the guides A A', in the manner and for the purpose substantially as shown and described.

Second, The slotted plate, E, and screws, c, or their equivalents, in combination with the former, B, and the guides, A A whereby the mold is made adjustable to angles of any degree, substantially as described.

58,702.—REAPING MACHINE.—Horatio Whitney New York City.

I claim the adjustable toothed chain or bolt, N, in combination with the inclined plate, M, arranged and operating substantially as described.

58,703.—MOP HEAD.—Ruel W. Whitney and Abner C. Stockin, South Berwick, Me.

We claim the improved mop head made as described, viz., of the bearer, the yoke and the collar, constructed, arranged and applied together and to the handle, substantially as specified.

58,704.—CHUCK.—D. E. Whiton, West Stafford, Conn.

I claim the chuck consisting of the jaws, B, scroll disk, D pinion, F, and hollow shouldered nut, M, combined and operating substantially as described for the purpose specified.

58,705.—COOKING STOVE.—William Wilson, Boston, Mass.

First, I claim in cooking stoves the use of the removable intermediate plates, e e, and slab, f f, arranged as described, and for the purpose specified.

Second, In combination with the above, the arrangement of the draft chamber, k k, as and for the purpose specified.

Third, The use of an elevating damper, r r, arranged and operating in the air box, o o, substantially as and for the purpose herein set forth.

58,706.—CORN HARVESTER.—James F. Winchell Springfield, Ohio.

First, I claim the cutting apparatus consisting of the revolving disks, R P, or their equivalents, in combination with the stationary blade, L, when said parts are arranged to operate as set forth.

Second, The combination of the tilting rack, D, stop bar, a, and lever, b, and spring, H, when arranged to operate as herein shown and described.

58,707.—GRAIN SEPARATOR.—S. M. Wirts and F Swift, Medina, Mich.

First, We claim the movable shaking spout or trough, L, operated by means of the bar, K, and the shoe, C, substantially as herein specified.

Second, The screens, a and 6, as constructed and combined in

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the supplemental shoe and with the carrier board, e, as and for the purpose specified.

Third, The combination of the rod, o, with the main shoe and supplemental shoe for regulating the inclination of the latter, as and for the purpose set forth.

Fourth, The employment of the rod, i, in combination with the lower screen, I, for the purpose of adjusting the inclination of said screen and imparting a bounding motion to it, substantially as set forth.

Fifth, The supplemental shoe pivoted at its inner end to the main shoe so as to allow of adjustment of its outer end, as and for the purpose specified.

58,708.—Take-up for Narrow-ware Looms.—Martin Wolf, New York City.

I claim the arrangement of a movable roller, F, attached to a sliding block, C, and operated or acted upon by a weight, in combination with a stationary roller, G, when applied to the woven material at any place between the breast beam roller, A, and the take-up roller, B, in the manner and for the purpose substantially as set forth and described.

58,709.—Speculum.—Thomas D. Worrall, Central City, Colorado.

First, I claim so constructing a vaginal speculum that the motion of its valves shall be confined exclusively to that portion of the vigina which is inside the pelvic bone.

Second, I claim so constructing a speculum that the whole of its valves may be worked simultaneously or one or more separately at the pleasure of the operator.

Third, I claim the use of rubber or other flexible material either securely fastened to or loosely surrounding a valved speculum and operating with it for the purpose set forth.

Fourth, I claim the screw, F, in combination with the joint, J, and the nut, C, for the purposes set forth.

Fifth, I claim the joint, K, in combination with the screw, F, and the nut, C, for the purposes set forth.

Sixth, I claim the ring, D, in combination with the tube, A, the nuts, H, the nuts, C, the screw, F, the joints, J and K, and the valves, B, for the purposes set forth.

58,710.—Railway-car Window.—J. K. Andrews, Antrim, Ohio, assignor to J. C. Tilton, Pittsburgh, Pa.

I claim the curved screens, K K, with their convex side turned inward, in combination with the curved grooves, M M, situated between the panels, H and E.

58,711.—Machine for Picking and Opening Fibrous Materials.—Samuel Baxendale, Boston, Mass., assignor to himself and Thomas H. Denham, of the same place, and Samuel B. Thaxter, Abington, Mass. Antedated Sept. 23, 1866.

I claim a series of divisions or partitions so placed as to form passages or channels leading to the wire cage of a picking, blowing, or separating machine, and causing the floating fibers to be deposited upon the cage in separate slivers or illets, substantially as herein described and for the purpose specified.

58,712.—Adjustable Shelf for Stovepipe, etc.—S. V. Beckwith, Hamden, Conn., asssignor to himself and I. B. Carpenter, New Haven, Conn.

I claim the combination of the adjusting band, B, the socket, C, and the shelf, D, provided with a shank, F, constructed and arranged so as to be adjustable, substantially in the manner set forth.

58,713.—Adjustable Railway-car Seat.—W. N. Bragg (assignor to himself and Wm. H. Trainham), Richmond, Va.

I claim the arrangement and combination of the slotted scroll, D, and rest, B, with the adjustable foot rest, F, and foot lever, G, when constructed and operated as herein described and for the purposes set forth.

58,714.—Machine for Fitting Axle Spindles to Skeins of Wagons.—Cornelius L. Campbell (assignor to Washington W. Wheaton), Binghamton, N. Y.

I claim the manner of fitting the arms or spindles of axletrees for wagons to cast-iron skeins or thimbles, by means of the revolving slide cutter, J, in combination with the adjustable way or guide-plate, L, fig. 3, the feed screen, E, and the hinged nut, K, substantially as and for the purposes described.

58,715.—Elevator.—Thomas F. Christman (assignor to himself and Willie Daniel), Wilson, N. C.

I claim the arrangement and combination of the base frame, A B, cylinder, C, guide rollers, a a, on the bent arms, b b, with the top windlass frame, D E, windlass, F G, chain pulleys, h h, adjustable endless chain, H H, and elevating buckets, I I, to operate at various hights, substantially as and for the purposes herein set forth.

58,716.—Pen Rack and Bill Holder.—C. P. Crossman (assignor to himself and Pembroke Churchill), West Warren, Mass.

I claim, First, The pen rack, B, in combination with a bed piece, A, substantially as specified.

Second, I also claim the bill holder, C, in combination with the pen rack, B, and bed piece, A, substantially as specified.

58,717.—Connecting and Supporting Stovepipe.—Solomon Crowell (assignor to himself and James B. Rae), Syracuse, N. Y.

I claim the coupling, b, and the flange on the coupling, c, and the tension rod, e, when the same are constructed, combined, and used in the manner as substantially set forth and described.

58,718.—Composition for Pavement, etc.—Geo. W. Davis, Fitchburg, Mass., assignor to Silas Pratt and E. S. Russell.

I claim a compound for covering walks, and for other similar purposes, composed of the above named substances, substantially in the proportions specified.

58,719.—Grinding Mill.—Chester F. Dean, St. Johnsbury, Vt., assignor to himself, Horace Paddock, Halsey R. Paddock, and Moses E. Barrett.

I claim the combination of the grinding cylinder, the stationary grinders, and the foraminous apron, arranged as specified.

58,720.—Harvester.—Charles Denton, Pekin, Ill., assignor to himself, Samuel E. Barber, and Samuel F. Hawley, Decatur, Ill.

I claim, First, The attaching of the spout, P, to the front part of the framing by means of springs, g g, substantially as and for the purpose described.

Second, The arrangement of the racks, a a, on the guide, I, attached to frame, A, in combination with the pinions, J J, secured to the pole or tongue, G, as shown and described, for adjusting the sickle higher or lower, as described.

58,721.—Pipe for Oil Wells.—John H. Duck and Elias K. Whitcomb, Elgin, Ill. Said Whitcomb assigns his right to J. T. Whipple, Chicago, Ill.

We claim the tube or screw, S, suspended within the main tube, L, by means of flanges, v v'', in combination with the several parts of the within described device, for the purpose specified.

58,722.—Wood-scraping Machine.—Erastus S. French (assignor to Joshua W. Partridge), Templeton, Mass.

I claim the combination, as well as the arrangement of the guide, E, reciprocating driver, G, the two scrapers, and the mechanism for advancing and receding the driver, and clutching and unclutching its drum, with respect to the driving shaft, the whole being so as to operate as explained.

58,723.—Car Coupling.—D. C. Guttridge, Canton, Ohio, assignor to himself and William Cluff, Stark county, Ohio.

I claim the rod, C, provided with the prong, F, and connected to the coupling pin, p, when used in combination with the movable coupler, B, and rod, g, as herein set forth.

58,724.—Corn Planter.—E. R. Holford (assignor to himself, Abiah Kingsley, and Clark Alvord), Westford, Wis.

I claim, First, The cam, D, in combination with the lever, E, and slides or valves, G, for the purposes and substantially as described.

Second, I claim the cam, D, in combination with the bar, F, levers, I and I', for the purposes and substantially as herein set forth.

Third, I also claim the arrangement of the levers, I' and R, for the purpose of elevating and lowering the plows, substantially as herein described.

58,725.—Buckle.—O. L. Hopson, Waterbury, Conn., and H. P. Brooks, Wolcottville, Conn., assignors to the Turner & Clark Manufacturing Co., of the latter place.

We claim, First, The buckle frame, formed with double bends in the sides, between the main portion and the loop, one portion of said double bend at each side of the frame, forming the axis for the tongue, substantially as specified.

Second, We claim the wire tongue formed with eyes, connected by the central portion of the wire, in combination with the aforesaid buckle frame, having double bends in its sides, substantially as set forth.

58,726.—Sawing Machine.—Jerome Hoyt (assignor to himself, Edwin Hoyt and Lafayette Farrington), Stamford, Conn.

In sawing machines I claim the combination of the grooved uprights, a a, sliding frame, B, saw frame, D, guides, i j, spring pawl, H', and rack, J, when arranged and operating substantially as described for the purpose specified.

58,727.—Apparatus for Generating Steam.—Elias S. Hutchinson (assignor to himself and Hugh L. McAvoy), Baltimore, Md.

I claim, First, The combination of an air-forcing apparatus and carburetor, with the engine and the boiler, for the purpose described.

Second, In combination with the engine, air-forcing apparatus, carburetor, and boiler, I claim the chamber for reserve of compressed air, as and for the purpse described.

Third, I claim the boiler tubes, constructed with a spherical or equivalent enlargement, as and for the purpose described.

58,728.—Solder-casting Machine.—E. M. Long, Portland, Me., assignor to himself and Isaiah Gilman.

I claim, First, The combination and arrangement of the balance wheel, A, geared wheels, B and C, and mold, D, substantially as set forth.

Second, The combination and arrangement of the receptacle, E, and cooler mold, D, or their equivalents.

Third, The combination of the receptacle, E, bar, h, joint, f, uprights, m and n, arranged in the manner and for the purposes described.

58,729.—Barrel Machine.—P. H. Lawler, Rochester, N. Y., assignor to himself and D. W. Roche.

I claim, First, Hanging the clamping frame, F, upon an axis arranged diagonally with relation to that of the clamping collars, and parallel with relation to that of the saw, as and for the purposes set forth.

Second, The arrangement of the adjustable tappet bar or cam, m, with the pin, n, substantially in the manner and for the purposes shown and described.

Third, The arrangement with the sliding mandrel, I, in the swinging frame, F, of the spring, s, the pivoted lever, N, and cam, M, substantially as shown and for the purposes set forth.

58,730.—Machine for Pointing Wire.—Eli J. Manville, Waterbury, Conn., assignor to O. L. Hopson and H. P. Brooks, Litchfield, Conn.

I claim, First, The shaft, a, formed with a cross mortise or slot, containing the dies, c c, in combination with two or more pairs of toggle blocks around the said shaft, said pairs of toggles acting alternately upon the dies, in the manner substantially as set forth.

Second, I claim the conical or tapering pointed screws, i i, in combination with the cap, f, dies, c, shaft, a, and toggle blocks, d d, all arranged as and for the purposes set forth.

58,731.—Gas Meter Register.—William McDonald (assignor to himself, Donald McDonald, and Noel E. Sisson), Albany, N. Y.

I claim, First, One or more intermediate wheels employed to communicate motion from the measuring bellows to the registering wheels, and so connected to the latter that either a forward or backward motion of the intermediate wheel or wheels will communicate a forward motion to the registering wheels.

Second, The arrangement and combination of the wheels, F and G, when constructed and operating in conjunction with the wheels, A B C D and E, substantially as and for the purposes set forth.

58,732.—Fountain Pen.—George R. Metten, St. Louis, Mo., assignor to Horace Baldwin, Painesville, Ohio.

First, I claim in atmospheric fountain pens, causing an automatic flow of ink by reason of the act of writing, substantially as described.

Second, I claim in atmospheric fountain pens supplying the place of the ink discharged from the ink reservoir with air during and by reason of the act of writing, substantially as described.

Third, I claim so constructing a fountain pen that the act of writing will open and close a vent hole for the admission of air into the ink reservoir, substantially as described.

Fourth, I claim so constructing a fountain pen that the amount of ink discharged from the ink reservoir, and the amount of air admitted therein, shall be in proportion to the stroke of the pen, whether light or heavy, substantially as described.

Fifth, I claim attaching the pen, g, to an oscillating or hinged disk, c, substantially as and for the purposes described.

Sixth, I claim the rod, k, in combination with the disk, c, substantially as and for the purpose described.

Seventh, I claim the spring, n, and cushion, n', in combination with the rod, k, substantially as and for the purpose described.

58,733.—Manufacture of Japanned Leather.—Jeremiah L. Newton, Boston, Mass., assignor to himself and William Wickersham.

I claim, First, The treatment of raw hide with japan varnish, or other suitable varnish, as and for the purpose above set forth.

Second, The preparatory process by immersing the hide in some volatile substance, in combination with and preparatory for japan varnishing, substantially as above set forth.

Third, The subjecting of raw hides to a breaking process as a preparation for and in combination with japanning, all substantially as described and for the purposes set forth.

58,734.—Ladder Hook.—Joseph G. Rockwell, Cortland, N. Y., assignor to Calvin Eaton, Webster, N. Y.

I claim the extension ladder hook, constructed and operating substantially as shown and described, and for the purposes herein set forth.

58,735.—Water Meter.—Gerard Sickels, Boston, Mass., assignor to himself, James W. Preston, and Rufus S. Lewis.

I claim, First, Operating the valves by means of two sliding yokes in connection with a weight, or its equivalent, substantially in the manner herein set forth.

Second, I claim the sliding yoke, B, attached to the pistons, and provided with the wedge-shaped projection, E, or their equivalent, for the purpose of changing the position of the valves, substantially as and for the purpose set forth.

Third, I claim the yoke, C, provided with the horns or projections, b b, as and for the purpose set forth.

Fourth, I claim the weight, H, or its equivalent, in combination with the inclines, D, as and for the purpose specified.

Fifth, I claim the combination of the yoke, C, with the levers, F, and valves, s, as and for the purpose set forth.

Sixth, I claim the combination of the yoke, B, the yoke, C, levers, F, valves, s, and weight, H, or its equivalent, when operating substantially as and for the purpose specified.

58,736.—Dumping Car for Coal Mines.—M. G. Smith and William P. Stevens (assignors to M. G. Smith), Kingston, Pa.

We claim, First, The tilting or adjustable guides, G' G', constructed and operating substantially as shown an described.

Second, The use of the fan, J, or its equivalent, for the purpose of tilting or inclining self-dumping carriages, so as to dump or unload the car without removing it from the carriage while slacking off, substantially as herein shown and described.

Third, The combination of a fan or support, with the adjustable guides, substantially as herein shown and described.

Fourth, The combination of the weighted arm, L, with the fan, a, or support, substantially as herein shown and described.

Fifth, The combination of the dog, N, with the weighted lever, L, and fan, J, substantially as herein shown and described.

Sixth, The combination of the hook, n, with the arm, L, and fan, J, substantially as herein shown and described.

Seventh, The combination of the latch, S, with the arm, L, substantially in the manner herein shown and described.

Eighth, The combination of the bar, O, and arm, P, with the fan, J, and guide, G', substantially as and for the purpose herein shown and described.

58,737.—Magazine Fire-arm.—Christopher M. Spencer (assignor to Spencer Repeating Rifle Company), Boston, Mass.

I claim the combination of the forked cartridge guide, m, with the stop, s, in the face of the carrier block, for the purpose of arresting the movement of the latter at the proper point for the introduction of a cartridge, substantially as set forth.

58,738.—Magazine Fire-arm.—Christopher M. Spencer (assignor to Spencer Repeating Rifle Company), Boston, Mass.

I claim controlling the action of the shell drawer and of the carrier block by means of the swinging stop, z, in combination with the cartridge guide, m, in the manner set forth, for the purpose of converting the arm from a self-loader into a hand-loader, or vice versa, as described.

58,739.—Anti-friction Device for the Axles of Machinery.—N. Bailly and C. Durand, France, G. H. Mesnard and Z. Pozier, Eng.

We claim the combination and arrangement of the several parts for the production of an anti-friction bearing for rotating shafts, substantially as herein set forth.

58,740.—Ship Windlass.—William Goodman, St. John, N. B.

I claim, First, The cam, F, loose on the capstan spindle, in combination with the coupling ring or collar, D, whereby the cam is connected with the spindle, substantially as described.

Second, I also claim the coupling collar, D, made with lateral teeth, E, and vertical teeth, Q, substantially as described.

Third, I also claim the combination of the revolving cam, F, with the pawl arms, I, substantially as described.

Fourth, I also claim the combination of the grooved upper collar, G, of the cam, with the teeth, E and Q, of the coupling collar, and the keys, S, substantially as described.

58,741.—Car Wheel.—Richard C. Mansell, Ashford, Eng.

I claim the exclusive use, as of my invention, of the improvements in the construction of wheels for engines and vehicles used on railways, by the adaptation and application thereto of retaining rings or tire fastenings, formed with outer flanges to support the part of tires which project over the sides of the bodies of wheels, and also the exclusive use of the adaptation and application to wheels of retaining rings or tire fastenings, made from flat bars of metal, the whole substantially as herein set forth, described and illustrated in and by the annexed sheet of drawings.

58,742.—Construction of Ships.—John Weems, Johnstone, England. Patented in England November 20, 1865.

I claim obtaining and distributing buoyancy or weight in ships by regulating a pressure of air or other fluid on the water in which they float, substantially as herein described.

Also the removal of parasites from ships' bottoms after the manner hereinbefore described.

58,743.—Application of Rudders to Spindle-shaped Hulls.—William Louis and Thomas Winans, London, England. Patented in England December 8, 1863.

We claim, First, The rudders, d, placed between the brackets, c, and the midship of the spindle-shaped hull, its leaves occupying respective sides of the single propeller shaft, substantially as described, for the purpose specified.

Second, The central rudder, d, placed between the brackets, c, and the midship of the spindle-shaped hull, when arranged with more than one propeller shaft, substantially as described for the purpose specified.

58,744.—Propeller.—William Louis and Thomas Winans, London, Eng. Patented in England June 20, 1863.

We claim, First, The adaptation to and combination with a spindle-shaped vessel, such as was invented by Ross and Thomas Winans, and for which Letters Patent were granted to them Oct. 26, 1858, No. 21,917, of one screw propeller placed at one end of the vessel, with its shaft coinciding with the center line or longitudinal axis of the vessel, or nearly so, the outside diameter of the hub of the propeller at one end corresponding with the outside diameter of the end of the vessel, and the other end of the propeller hub being continued to a point, thereby completing the spindle form of the vessel.

Second, The combination of the flanged hub, f, shaft, d, webs, f f', projection, h, propelling blades, i, and feathers, i i, arranged with the grooved portion, b, of the body, a, of the spindle-shaped hull herein described, substantially as and for the purpose specified.

REISSUES.

2,372.—Cooking Stove.—James Spear, Philadelphia, Pa. Patented Feb. 19, 1861. (Div. A.)

I claim the combination of the sifting and ash drawer, A and B, with the curved or gulde plate, D, when used in connection with a stove or range, in which the oven extends under the fire-grate.

2,373.—Cooking Stove.—James Spear, Philadelphia, Pa. Patented Feb. 19, 1861. (Div. B.)

I claim the arrangement of the ash drawer, B, having bail, G combined therewith in an ash pit or chamber of a stove or range, and in combination with the fire grate or fire chamber thereof, so as to receive the ashes or cinders falling therefrom, and thereafter to be removed, substantially as described.

2,374.—Cooking Stove.—James Spear, Philadelphia, Pa. Patented Feb. 19, 1861. (Div. C.)

I claim the arrangement of an ash pit under the hearth, and in front of a long oven stove, constructed and operating substantially as described.

DESIGNS.

2,487 and 2,488.—Trade Mark.—John W. Carrol Lynchburg, Va. Two Cases.

2,489.—Trade Mark.—William Freudenau (assignor to the Union Steam Mill Company), St. Louis, Mo.

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2,490.—Drapery Trimming.—Catholina Lambert, New York City.

2,491 and 2,492.—Shawl Border.—Morris M. Peyser, Boston, Mass. Two Cases.

2,493.—Child's Long Comb.—Leonce Picot, Hoboken, N. J., assignor to the Rubber Clothing Company, New York City.

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MACHINERY.—S. C. HILLS, NO. 12 PLATT street, New York, dealer in Steam Engines, Boilers, Planes; Lathe, Chucks, Drills, Pumps; Mortising, Tenoning and Sash Machines, Woodworth's and Daniels's Planers, Dick's Punches, Presses and Shears; Cob and Corn Mills; Harrison's Grist Mills, Johnson's Shingle Mills; Belting, Oil, &c. c

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All sizes constantly on hand, or furnished on short notice. Descriptive circulars, with price list, sent on application.
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52* Utica, N. Y. Branch office 96 Maiden Lane N. Y. City.

$200 per MONTH is MADE by AGENTS selling the Parker Sewing Machine—the most perfect in existence. Parker Sewing Machine Company, Cincinnati, Ohio. 8 13

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MOST VALUABLE MACHINE for all kinds of irregular and straight work in wood, called the Variety Molding and Planing Machine, indispensable to competition in all branches of woodworking. Our improved guards make it safe to operate. Combination collars for cutters, saving 100 per cent, and feed table and connection, for waved moldings and planing, place it above all others. Evidence of the superiority of these machines is the large numbers we sell, in the different states, and parties laying aside others and purchasing ours, for cutting and shaping irregular forms, sash work, etc.
We hear there are manufacturers infringing on some one or more of our nine patents in this machine. We caution the public from purchasing such.
All communications must be addressed "Combination Molding and Planing Machine Company, cor. 1st ave. and 24th-st., New York, where all our machines are manufactured, tested before delivery, and warranted.
Send for descriptive pamphlet. Agents solicited. 14 3*

PATENT POWER AND FOOT-PUNCHING PRESSES, the best in market, manufactured by N. C. STILES & CO., West Meriden, Conn. Cutting and Stamping Dies made to order. Send for Circulars. [10 tf

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N. B.—This detector is covered by two U. S. patents. Parties using or selling these instruments without authority from me will be dealt with according to law. [13 28*

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Patent Rolled Plate Glass for Skylights for sale very low by
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THE GILLESPIE GOVERNOR COMPANY, of Boston, are now manufacturing
GILLESPIE'S PATENT HYDRAULIC GOVERNOR,
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After a test of five years' service, this Governor has proved itself far superior to any other hitherto in use, practically accomplishing for Water Power the same as a Cut-off for Steam Power.
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☞ A few of the many testimonials which the Company has received, in regard to the operation of their Governors, were published May 19, 1866, in No. 21 of this paper, to which reference is made. 26 13

FARRAR PLANER.—WE ARE NOW IN REceipt of a Consignment of these very celebrated Planers, from the Manchester Locomotive Works, N. H., and can sell them at lower figures than they have been sold since 1863. Send for cuts and price, STEPTOE, McFARLAN & CO.,
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15 4] Lehigh Valley Brass Works, Bethlehem, Pa.

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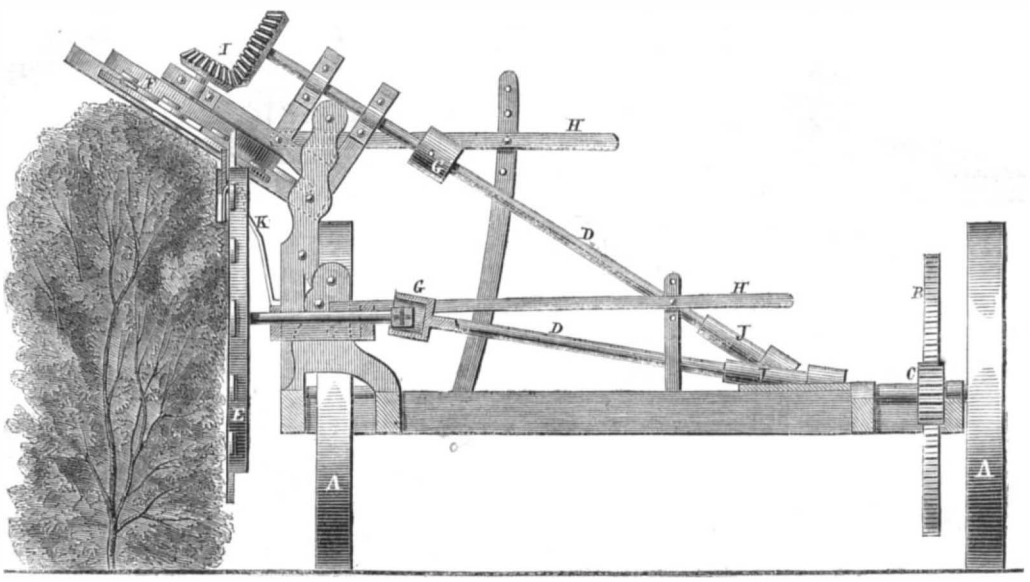
Improved Hedge Trimmer.

In England the hedge, or "live fence," has been the favorite means of inclosing farm lands for many generations. The hedge forms a beautiful feature in the landscape, and, when attended to, is impervious not only to cattle, but to most of the smaller animals. The increasing value of land in England has, however, drawn attention to the necessity of substituting a fence requiring less room and casting less shade. In our Western prairies no necessity exists for thus carefully preserving every foot of arable soil, and the Osage orange, and other closely-growing shrubs, are utilized as fences.—The principal objection to them is the care required to keep them properly trimmed, so that they shall be induced to confine their growth to the limits best calculated to insure an impenetrable barrier. This work is now done by hand, but the improvement herewith illustrated, contemplates a revolution in this department of Western farm work. The engraving represents a frame carried upon two wheels, A, the treads of which may be corrugated to insure their rotation. The apparatus may be drawn by horses, attached to a tongue and axle which has two wheels, not shown. To the main shaft, which carries the two wheels on which the body of the machine rests, is secured a large gear, B, which drives two pinions, C, one on each side. These give motion to the shafts, D, one of which carries the vertical cutter head, E, and the other the oblique cutter head, F. The shafts, D, are jointed at G, by Baylor's universal joint, so that any angle desired may be given the cutter heads by means of the levers, H. The head, F, is revolved by the intervention of two bevel gears, I. Sleeves, J, which are adjustable, allow of the extension or contraction of the shafts, D. By means of a fixed disk outside the heads, E and F, which carry cutters corresponding with those on the revolving heads, the knives operate similar to the blades of scissors. A guide, K, passes out and in front of the cutting heads, which serves to bring every twig under the operation of the blades.

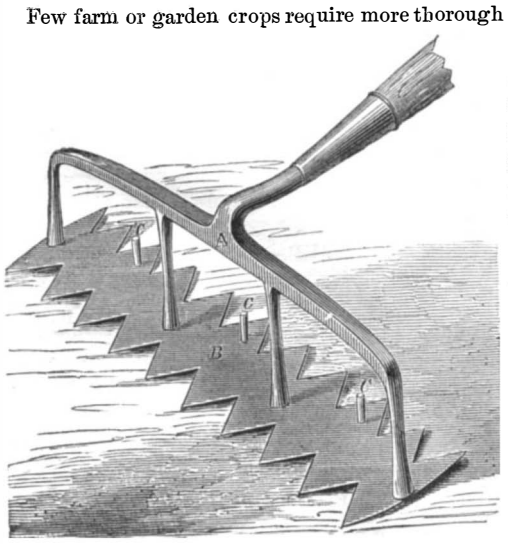
Where, as at the West, vast fields, on nearly level ground, are under cultivation, it seems as though this machine might be used to advantage. It was patented through the Scientific American Patent Agency, March 6, 1866, by David Oliver, whom address, Box 572, Galesburg, Ill., for additional particulars.



OLIVER'S HEDGE TRIMMER.

ALLEN'S WEEDING OR SCUFFLE HOE.

Few farm or garden crops require more thorough

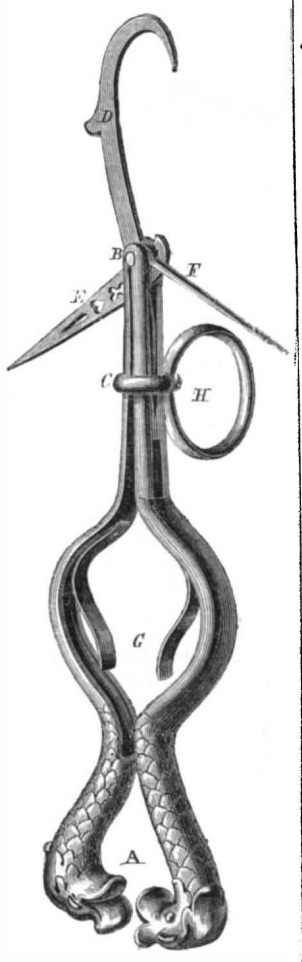


culture than onions, carrots, beets, etc., which are usually planted in drills. While growing they must be kept free from weeds if the farmer intends to get a decent crop. The simple implement here shown will commend itself to every practical farmer and gardener as an efficient and handy article. The frame, A, is of wrought or malleable iron, the supports being lozenge-shaped across their transverse section, to act as pulverizers and looseners of the soil. To them is attached a steel blade, B, having serrated teeth sharpened from the under side. Pins, C, project from the upper side to catch the weeds and also to loosen the soil. They can pass through, if desired, to more effectually subserve this purpose. By having the teeth formed like those of a saw they are less liable to become dull. They cut the weeds, and the end supports serve as guides in working close to the rows.

Patented through the Scientific American Patent Agency, April 24, 1866, by George P. Allen, Woodbury, Conn. Address as above for further information.

GSCHWIND AND GRETHER'S COMBINATION HOOK AND HOLDER.

This neat little implement may be called the traveler's convenience. It combines a cigar holder, hat hook, and toothpick, in a neat, portable and handy form. The engraving exhibits it of full size. It is made of brass gilded, or any other metal. The ornamental jaws, A, are hinged at the other extremity, and are held open by the spring of the metal passing round the pivot at B. An embracing clasp, C, can be slipped down the shank, when the two jaws are brought together, and grasping a hat, cap, or other article, it can be hung to the wall by means of the hook, D. Pivoted to the rivet, B, is an ivory toothpick, E, and a metallic one, F. When used as a cigar holder the springs inside the bow, at G, embrace the weed, while the ring, H, is worn on the finger.—The toothpick blades close into recesses in the shank. It can be made small enough to be used by ladies for holding their sewing and also for fastening up the skirts of their dresses.



This ingenious device was patented through the Scientific American Patent Agency, Aug. 14, 1866, by Charles Gschwind and John Grether, Union Hill, North Hudson county, N. J., to whom apply for further information.

The late Marine Disasters.

The appalling wreck of the steamship *Evening Star* has been very generally commented upon by the local press, but no light has been thrown upon the cause of the disaster, though the owners of the vessel are very generally censured for the meager number and character of the life-boats in proportion to so large a body of passengers. The public have a right to a thorough investigation of all the facts connected with the disaster, and it is to be hoped that such investigation may lead to a searching scrutiny of the present system of inspection. It is stated by a morning contemporary that, about the month of July last, the *Evening Star* went ashore on the Florida Reef, from which she received considerable damage; that a hole was stove in her bottom, and her keel was partially broken off, and that the keel was then cut away, and a piece was scarped in level with the keel. In place of six life boats prescribed by law, it is said that she had only *four*, and that even these would scarcely have borne up the whole number of passengers and crew in ordinary weather. The public will probably insist upon rigid proof that the perils of the sea were not hightened by the defects alluded to. The *Evening Star* was a side-wheel steamer, with upright engines, and that she was considered by her owners a seaworthy vessel is inferred from the fact that, although valued at $500,000, she was uninsured.—*Shipping and Commercial List.*

THE Russian army numbers 1,135,915 men in addition to 119,540 Cossacks liable to serve.

MECHANICS

INVENTORS, MANUFACTURERS.

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